NOTICES OF PROPOSED RULEMAKING
Initiated Before January 1, 1995

Unless exempted by A.R.S. § 41-1055, each agency shall begin the rulemaking process by first filing a Notice of Proposed Rulemaking with the Governor's Regulatory Review Council as specified by A.R.S. § 41-1052. The agency shall also submit the text of the rules being proposed, an estimate of the economic impact, and a cost/benefit analysis of the proposed action. Following the Council's review and approval of the rule, the Council shall forward the rule to the Office of the Secretary of State for filing and publication in the *Arizona Administrative Register.*

Under the Administrative Procedure Act (A.R.S. § 41-1001 *et seq.*), an agency must allow at least 30 days to elapse after the publication of the Notice of Proposed Rulemaking in the *Register* before beginning any proceedings for adoption, amendment, or repeal of any rule. A.R.S. §§ 41-1013 and 41-1022 and A.A.C. R1-2-202.

TITLE 20. COMMERCE, BANKING, AND INSURANCE

CH. 6. DEPARTMENT OF INSURANCE

The undersigned hereby gives notice that pursuant to the statutory authority of A.R.S. §§ 20-143 and 20-230(A), the following action is proposed:

Adopt:

R20-6-206. Local or Regional Retaliatory Tax Information

Summary

The proposed rule will implement the retaliatory tax computation provisions of A.R.S. § 20-230(A). The proposed rule specifies information to be reported by domestic insurers and foreign and alien insurers conducting business in Arizona and in whose country or state local or regional taxes are imposed upon domestic insurers. The information required to be reported under this rule will enable the Department to compute the amount of retaliatory taxes due to Arizona pursuant to A.R.S. § 20-230(A).

Governor's Regulatory Review Council

The proposed rule with the economic impact, cost/benefit analysis, and impact on small businesses was heard by the Governor's Regulatory Review Council on June 6, 1995.

Opportunity for Public Comment

Notice is given that any person may file written comments on the proposed rulemaking with the agency contact person on or before August 16, 1995.

Contact: Gregory Y. Harris, Department of Insurance, 2910 North 44th Street, Suite 210, Phoenix, Arizona 85018 (602) 912-8454

The Department has scheduled an oral proceeding to be held as follows:

Date:	August 7, 1995
Time:	10 a.m.
Location:	Department of Insurance 2910 North 44th Street #210 Phoenix, Arizona

Dated: June 7, 1995

/s/ Chris Herstam
Director of Insurance

Filed in the Office of the
Secretary of State 6/8/95

NOTICES OF PROPOSED RULEMAKING
Initiated After January 1, 1995

Unless exempted by A.R.S. § 41-1005, each agency shall begin the rulemaking process by first filing a Notice of Proposed Rulemaking, containing the preamble and the full text of the rules, with the Secretary of State's Office. The Secretary of State shall publish the notice along with the Preamble and the full text in the next available issue of the *Arizona Administrative Register.*

Under the Administrative Procedure Act (A.R.S. § 41-1001 *et seq.*), an agency must allow at least 30 days to elapse after the publication of the Notice of Proposed Rulemaking in the *Register* before beginning any proceedings for adoption, amendment, or repeal of any rule. A.R.S. §§ 41-1013 and 41-1022.

TITLE 18. ENVIRONMENTAL QUALITY

CHAPTER 9. DEPARTMENT OF ENVIRONMENTAL QUALITY WATER POLLUTION CONTROL

PREAMBLE

1. Sections Affected: — Rulemaking Action
   R18-9-128 — Repeal

2. The specific authority for the rulemaking, including both the authorizing statute (general) and the statutes the rules are implementing (specific):
   Authorizing Statutes: A.R.S. §§ 41-1003 and 49-101
   Implementing Statute: A.R.S. § 49-761(A)(6)

3. The name and address of agency personnel with whom persons may communicate regarding the rule:
   Name: Martha L. Seaman
   Address: Arizona Department of Environmental Quality
   3033 North Central Avenue, Eighth Floor
   Phoenix, Arizona 85012-2809
   Telephone: (602) 207-2222 or (800) 234-5677 (Arizona only)
   Fax: (602) 207-2251

4. An explanation of the rule, including the agency's reasons for initiating the rule:
   The Department is proposing to repeal the Aquifer Protection Permit General Permit Rules set out in R18-9-128. These rules currently regulate the application of sewage sludge on agricultural lands in order to ensure the protection of groundwater quality. Since this proposed rulemaking is intended to consolidate the Department's sewage sludge requirements vis-a-vis land application; and since this proposed rulemaking regulates sewage sludge on any lands, including agricultural sites; and since the substantive rules in R18-9-128 are also included in this proposal, the Department proposes to delete R18-9-128 as a separate rule. The public is invited to comment on this regulatory approach.

5. A showing of good cause why the rule is necessary to promote a statewide interest if the rule will diminish a previous grant of authority of a political subdivision of this state:
   Not applicable.

6. The preliminary summary of the economic, small business and consumer impacts:
   This proposed rulemaking repeals the existing Aquifer Protection Program's rules for the application of sewage sludge to agricultural lands. However, since the purpose for this repeal is to relocate all of these requirements in a newly proposed Article (see additional Department Notice of Proposed Rulemaking in this *Register*) and will continue to be mandated, the Department does not anticipate any economic impact to any entity in the state, including small businesses and consumers.

7. The name and address of agency personnel with whom persons may communicate regarding the accuracy of the economic, small business, once consumer impact statement:
   Name: Martha L. Seaman
   Address: Department of Environmental Quality
   3033 North Central Avenue, Eighth Floor
   Phoenix, Arizona 85012-2809
   Telephone: (602) 207-2222 or (800) 234-5677 (Arizona only)
   Fax: (602) 207-2251

8. **The time, place and nature of the proceedings for the adoption, amendment, or repeal of the rule or, if no proceeding is scheduled, where, when and how persons may request an oral proceeding on the proposed rule:**
Persons interested in submitting written comments on the proposed rulemaking should postmark or fax them to the person identified above no later than 5 p.m. on Friday, September 1, 1995.

Public workshops and hearings have been scheduled to discuss the proposed rulemaking and to receive public comments on suggestions for improvements. These meetings are scheduled for the following times and locations:

Date: August 14, 1995
Time: 10 a.m. to 1 p.m.
Location: Pima Association of Governments Offices
Room 405
177 North Church Avenue
Tucson, Arizona

Date: August 14, 1995
Time: 6 p.m. to 9 p.m.
Location: Unified School District Auditorium
315 West Fifth Street
Bowie, Arizona

Date: August 16, 1995
Time: 2 p.m. to 5 p.m.
Location: Department of Environmental Quality
Public Meeting Room
3033 North Central Avenue
Phoenix, Arizona

Date: August 17, 1995
Time: 1 p.m. to 4 p.m.
Location: Coconino County Health Department Offices
2500 North Fort Valley Road
Flagstaff, Arizona

Date: August 18, 1995
Time: 1 p.m. to 4 p.m.
Location: City Council Chambers
180 West First Street
Yuma, Arizona

The Department is committed to complying with the Americans with Disabilities Act. If any individual with a disability needs any type of accommodation, please contact the Department at least 72 hours before the hearing. Persons interested in presenting verbal comments, submitting written comments, or obtaining more information on the proposed rules may do so at these meetings. The Department will respond to all significant comments in the preamble accompanying the final rules.

9. **Any other matters prescribed by statute that are applicable to the specific agency or to any specific rule or class of rules:**
Not applicable.

10. **Incorporation by reference and their location in the rules:**
Not applicable.

11. **The full text of the rules follows:**

TITLE 18. ENVIRONMENTAL QUALITY

CHAPTER 9. DEPARTMENT OF ENVIRONMENTAL QUALITY WATER POLLUTION CONTROL

ARTICLE 1. AQUIFER PROTECTION PERMITS

Section
R18-9-128. ~~General permits: Agricultural application of wastewater sludge.~~

ARTICLE 1. AQUIFER PROTECTION PERMITS

R18-9-128. ~~General permits: Agricultural application of wastewater sludge~~

~~A. A General Permit is issued for agricultural applications of wastewater sludge meeting all of the conditions prescribed in this Section.~~

~~B. Any sludge stored at the application site for more than 24 hours shall be stored in water-tight manner.~~

~~C. The site at which the sludge is applied is subject to the following conditions:~~

~~1. The sludge shall not be stored or applied closer than 250 feet from any water well, other than a public or semi-public drinking water well, or closer than 2,000 feet from any public or semi-public drinking water supply well.~~

~~2. The sludge shall not be applied to land with slopes greater than 6%.~~

~~3. Application sites within the 100 year floodplain shall be approved by the local floodplain administrator.~~

~~4. The sludge shall not be applied to land where the main annual groundwater elevation is less than 40 feet below the land surface.~~

~~D. The sludge shall be applied as follows:~~

~~1. All sludge shall be uniformly distributed and incorporated.~~

~~2. A new crop shall be grown with each application of sludge.~~

~~3. The sludge shall not be applied to frozen or snow-covered ground or to saturated soils.~~

~~E. The rate at which the sludge is applied is subject to all of the following:~~

~~1. The sludge shall be applied at a rate not to exceed eight dry tons per acre.~~

~~2. The sludge shall not be applied to soil with pH of less than 6.5 at the time of the sludge application.~~

~~3. No more than 10% of the maximum allowable cumulative metal application shall be applied annually. The maximum allowable cumulative metal application varies with the cation exchange capacity (CEC) of the soil and shall be determined based on the following table:~~

~~Max. Allowable Cumulative Metals Application (lbs/ac)~~

~~CEC~~	~~Less Than 5~~	~~5 to 15~~	~~Greater than 15~~
~~Metals~~			
~~Lead~~	~~500~~	~~1000~~	~~2000~~
~~Zinc~~	~~250~~	~~500~~	~~1000~~
~~Copper~~	~~125~~	~~250~~	~~500~~
~~Nickel~~	~~50~~	~~100~~	~~200~~

~~4. The annual application of cadmium shall not exceed 0.5 Kg/ha or 0.45 pounds per acre.~~

~~5. The application of sludge shall not result in an application of nitrogen that exceeds the nitrogen requirement of the crop to be grown with that sludge application.~~

~~6. The application of the sludge shall not result in a hydraulic loading rate that exceeds 27,000 gallons per acre per application.~~

~~7. The sampling required to determine the application rates described in this Section shall be performed no more than one month prior to the application.~~

~~F. The analyses required to determine the application rates described in this Section shall be performed by laboratories certified by the state if such certification procedures exist.~~

~~G. Records relating to sludge application shall be kept and shall be available as follows:~~

~~1. Copies of any soil, crop, sludge, or water monitoring record shall be made available to the owner of the wastewater treatment facility and made available to the Department. The record shall include the dates of sludge application and weather conditions on those dates; the amounts, quality, and source of the sludge; the location within the site where the sludge was applied; and the cumulative amounts of nutrients and heavy metals applied to each field.~~

~~H. The irrigation of the application site with fresh water shall not exceed the consumptive use of the crop and evapotransiration needs.~~

TITLE 18. ENVIRONMENTAL QUALITY

CHAPTER 13. DEPARTMENT OF ENVIRONMENTAL QUALITY SOLID WASTE MANAGEMENT

PREAMBLE

1. Sections Affected:	Rulemaking Action
Article 15	New Article
R18-13-1501	New Section
R18-13-1502	New Section
R18-13-1503	New Section
R18-13-1504	New Section
R18-13-1505	New Section
R18-13-1506	New Section
R18-13-1507	New Section
R18-13-1508	New Section
R18-13-1509	New Section
R18-13-1510	New Section
R18-13-1511	New Section
R18-13-1512	New Section
R18-13-1513	New Section

R18-13-1514	New Section
Appendix A	New Section
Appendix B	New Section

2. The specific authority for the rulemaking, including both the authorizing statute (general) and the statutes the rules are implementing (specific):
Authorizing Statutes: A.R.S. §§ 41-1003 and 49-101
Implementing Statute: A.R.S. § 49-761(A)(6)

3. The name and address of agency personnel with whom persons may communicate regarding the rule:
Name: Martha L. Seaman
Address: Arizona Department of Environmental Quality
3033 North Central Avenue, Eighth Floor
Phoenix, Arizona 85012-2809
Telephone: (602) 207-2222 or (800) 234-5677 (Arizona only)
Fax: (602) 207-2251

4. An explanation of the rule, including the agency's reasons for initiating the rule:
The purpose of this proposed rulemaking is to establish a regulatory program, administered by the Arizona Department of Environmental Quality (hereafter "the Department"), which will preserve and ensure the safety of public health and the environment during all activities related to the beneficial placement of sewage sludge (hereafter "biosolids") on land in Arizona.

A. Background for these Proposed Rules
Each day a typical family of four produces up to 400 gallons of wastewater. Over the last 25 years the state of Arizona has diligently worked to ensure that all of its citizens enjoy adequate wastewater treatment and are not threatened by water pollution. To date, over 700 wastewater treatment plants have been built throughout the state. Sewage sludge is a by-product of these wastewater treatment plants and on average, 7.7 million dry metric tons are produced each year. Every individual is responsible for approximately 64 pounds of sludge each year.

When relatively pollutant-free, sewage sludge may be used as a valuable soil conditioner or fertilizer-type product. If used in this manner, the material is often referred to as "biosolids" rather than sewage sludge. The term biosolids distinguishes material which is beneficially reused from material which is contaminated and must therefore be disposed in landfills or fired in incinerators. Nationally approximately 36% of the sewage sludge generated by wastewater treatment plants are land applied as biosolids.

The Department encourages the beneficial use of sewage sludge, otherwise known as "biosolids," as a soil amendment and fertilizer on land in Arizona. The state recognizes that biosolids, generated both in-state and out-of-state, are being land applied and that such activities improve the productivity and value of land throughout the state. The state also recognizes that the beneficial nature of biosolids is directly related to the quality of the material, including the potential presence of pollutants and pathogenic organisms.

Since 1979 the Department has been actively engaged in the regulation and control of land application of biosolids. These controls are authorized by the Water Quality and Solid Waste Management Chapters of the Environment Title (Arizona Revised Statutes §§ 49-241 *et seq.* and 49-701 *et seq.*) During these 16 years, there have been no known lawful incidents involving biosolids which posed an actual or potential threat to either public health or the environment.

Historically the Department has implemented this program through a series of regulatory guidelines distributed by the Waste Programs Division. These guidelines were last revised in 1992 and set out recommendations regarding the elements of a land application plan of operation, application rates, management practices, and self-monitoring conditions. In addition, since September 1989, controls to prevent groundwater contamination have been established in an aquifer protection program general permit for agricultural applications of wastewater sludges (see A.A.C. R18-9-128).

On February 19, 1993, the United States Environmental Protection Agency (hereafter "EPA") promulgated *Standards for the Use and Disposal of Sewage Sludge*, a comprehensive, risk-based series of standards and requirements that regulate sewage sludge, including biosolids which are land applied [see 58 Fed. Reg. 9248, as revised on February 25, 1994 (59 Fed. Reg. 9098)].

The federal regulations establish minimum requirements for biosolids quality, land application sites, management practices, land-use restrictions, self-monitoring and recordkeeping obligations, and reporting duties. These standards and requirements set out in 40 CFR 503 (hereafter "Part 503"), are implemented by the EPA Regional Office in San Francisco, California, and have been in full force and effect in Arizona since February 19, 1994. The Part 503 standards also regulate the disposal of sewage sludge in landfills and incinerators. A second set of EPA rules, 40 CFR 258, were adopted to control sewage sludge that is co-disposed with other municipal solid wastes [see 56 Fed. Reg. 51016, October 9, 1991, and revised on June 26, 1992 (57 Fed. Reg. 28627) and October 1, 1993 (58 Fed. Reg. 51546)].

On April 24, 1994, the Governor signed Laws 1994, Ch. 273, § 6 into law. This legislation incorporates the Part 258 standards into A.R.S. Title 49, Chapter 4, Article 4, § 761.01. At the present time, the state of Arizona has not adopted rules which correspond to Part 503. This rulemaking proposes rules to adopt standards substantially similar to Part 503.

The proposed rules establish a method to ensure that biosolids are kept free from harmful contamination and, ultimately, to safeguard public health. As with A.R.S. § 49-761.01, the biosolids rules will create a state program which is similar to that

imposed by the Federal Government, but which also addresses the particular concerns of Arizona, including carrying over some of the features of the existing state program.

It is important to note that these rules are permissive in nature. They do not require any person to land-apply biosolids or accept biosolids against the person's wishes. Wastewater treatment plants will retain discretion to dispose of their residues through a number of lawful and appropriate means. However, in the event that a person decides to engage in land application, those activities must conform to this Article.

A Notice of Docket Opening for this proposal appeared in the February 17, 1995, issue of the *Register.*

B. Specific Section-by-Section Explanation of this Proposal:

The Section-by-Section explanation of these proposed rules is organized as follows:

I. Applicability.
II. General Requirements
III. Applicator Registration
IV. Pollutant Concentrations
V. Pathogen Controls
VI. Management Practices
VII. Site Restrictions
VIII. Vector Attraction Reduction
IX. Transportation
X. Self-Monitoring, Recordkeeping and Reporting
XI. Enforcement

I. Applicability

As noted above, these proposed rules are very similar to the 40 CFR 503 (hereafter "Part 503") sewage sludge standards and requirements adopted by the United States Environmental Protection Agency. The scope of this rulemaking is very close to the scope of the federal regulations insofar as they address land-application activities. As in Part 503, this rule does not regulate the generation or treatment of biosolids. It does not mandate a particular stabilization method, drying process, or specify a minimum solids content. Rather, the proposed rules control the placement of the final biosolids material on land and ensure it is done in a manner which protects public health and the environment to an ample margin of safety.

These proposed rules will affect any person who generates biosolids and prepares them for land application. A person prepares biosolids for land application by digesting, thickening, drying, and treating for pathogen and vector attraction reduction. A person who blends biosolids from two or more sources or with materials other than biosolids (e.g., organic composts) is also considered to be a person who prepares biosolids for land application.

The manner in which biosolids are applied to land is covered in detail. Land application includes the placement of either bulk or bagged biosolids on land in order to take advantage of the material as a soil conditioner and nutrient fertilizer. It does not include biosolids placed on the land for purposes of disposal only. Land application sites include, but are not limited to, agricultural fields, parks, gardens, lawns, nurseries, tree farms, golf courses, cemeteries, sports fields, pasture land, rangeland, forests, and reclamation sites. Following final promulgation, persons engaged in these activities will be required to do so in conformance with the application rates, siting criteria, and operational practices in the final rule. Moreover, records of these activities will be required and reports periodically submitted to the Department.

The rule will also affect persons who transport biosolids to a storage area, blending facility, or land application site. They will require that such transport be done in a manner which will prevent spills; and in the event a spill occurs, the rule specifies reporting duties as well as mitigation steps to minimize any environmental effects from the spill.

The proposal imposes some minor duties on the part of certain owners or leaseholders of land application sites. These may, depending on the quality of the biosolids, include waiting periods for harvesting crops and, if such restrictions are still in effect at the time of property transfer, informing persons with succeeding property interests of the restrictions.

The proposed rules do not address certain biosolids which are more properly regulated by other environmental programs. Therefore, biosolids which test positive and exhibit one or more of the characteristics of hazardous waste will be regulated as a hazardous waste under A.R.S. § 49-901 *et seq.* and the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. 6921 *et seq.* Similarly, biosolids found to have a polychorinated biphenyls (PCB) concentration of equal to or greater than 50 milligrams per kilogram of biosolids must be disposed of in strict compliance with the Toxic Substances Control Act (TSCA), 15 U.S.C. 2601 *et seq.*

Grit and screenings are more like municipal solid wastes than residues produced from the rest of the wastewater treatment processes. They are therefore not included in the definitions of sewage sludge or biosolids and their disposal will continue to be regulated as solid wastes.

As noted above, today's proposed standards are based on the risk assessment conducted by U.S. EPA. These extensive studies allowed the EPA to model the likely pollutant migration pathways and affects of hundreds of substances commonly found in

biosolids. EPA could then predict the levels at which human health or the environment might be adversely impacted. However, these studies were limited to those substances commonly found in biosolids.

The EPA did not conduct similar studies on commercial or industrial sludges (i.e., residuals produced by the treatment of commercial or industrial wastewater). Therefore, EPA has deferred including the use and disposal of such residual sludges, or even biosolids mixed with these sludges, within the scope of Part 503. The Department has elected to follow EPA's lead on this issue and is similarly not including commercial or industrial residuals in the rules.

According to A.R.S. § 49-854(A)(12), the Department, after consultation with the Special Waste Advisory Committee, is to determine whether or not to designate certain identified wastes as "special wastes." One of these wastes is "sludges that are transported from wastewater treatment facilities for treatment, storage, or disposal and that are not otherwise regulated by permits under Sections 402 or 307(b) of the Clean Water Act, as amended, or by regulations adopted under the Resource Conservation and Recovery Act (RCRA)."

The Department does not believe that land-applied sewage sludge should be regulated as special waste at this time. The comprehensive, self-implementing sewage sludge standards which U.S. EPA adopted as Part 503 are well detailed in this preamble. In addition, U.S. EPA has placed sewage sludge requirements in Section 402 permits the Agency has issued to publicly and privately-owned wastewater treatment facilities. Therefore, most of the sewage sludge generated in the state of Arizona is regulated by Section 402 permits. Moreover, sewage sludges disposed of in municipal landfills are regulated by the RCRA regulations set out in 40 CFR 258.

The Department believes that these various permits, regulations, and rules satisfy the A.R.S. § 49-854 contingencies and will adequately regulate sewage sludge which is placed on land for beneficial purposes and that the additional safeguards provided by the special waste program, such as the need to manifest each load of special waste, are unnecessary. However, the Department is interested in receiving comments on this position and may reconsider designating and covering certain sewage sludge disposal practices as special waste in the future.

Finally, the rules do not address facilities used to treat or improve the quality of biosolids. The Department's objective is to regulate the final use of this material. However, it should be noted that facilities and structures used to store or treat sewage sludge, including biosolids, will continue to be regulated as solid waste storage or treatment facilities under A.R.S. Title 49, Chapter 4, Article 4, and those facilities, such as compost or blending facilities which have a potential to discharge pollutants to groundwater will continue to be required to obtain an aquifer protection permit unless exempted by A.R.S. § 49-241(E).

II. General Requirements

The proposed rules mandate that persons who prepare biosolids provide subsequent blenders, transporters, or applicators with information on the quality of the biosolids they produce. This quality data includes information on pollutant analyses as well as any pathogen treatment and vector attraction reduction measures taken by the person who prepares, and the effectiveness of, these measures.

The proposed rules do not specify a nitrogen limit. However, they do preclude biosolids from being applied such that the agronomic rate of a crop or other vegetation is exceeded. Consequently, while the rules do not expressly require the person who prepares biosolids to conduct a periodic analysis of nitrogen, the applicator will need such information in order to determine the agronomic rate for the crop or vegetation present or planned at the application site.

It should also be noted that biosolids may qualify as a fertilizer or fertilizer product. As such, its generation and use may be subject to additional restrictions established by the Department of Agriculture.

For a more detailed overview of EPA's Part 503 regulations, see *"A Plain English Guide to EPA's Part 503: The Biosolids Rule"*, EPA 832R-93003, September 1993, which may be obtained by contacting the Sludge Coordinator in EPA's regional office in San Francisco, California at (415) 744-1039, or EPA's Water Resource Center in Washington D.C. at (202) 260-7786.

III. Applicator Registration

Historically, the Department has required persons engaged in land application to identify themselves and the location of their land application sites. Today's proposal continues this practice by having all persons engaged in land application of biosolids (regardless of whether the biosolids are generated or prepared in-state or out-of-state), register with the Department. For sites which have never had biosolids placed on them before, the proposed rules require the applicator to, through a notice in a local newspaper in the area, publicly notice his/her intention to use the site for land application in the future.

The Department will use this site-by-site inventory to determine the level of land application activity in the state as well as fulfill its oversight responsibilities. For example, in the event of environmental degradation, the Department will be able to identify the persons conducting land application at or near the affected area and determine whether the biosolids may have caused or contributed to the problem.

We anticipate that the new process will be less burdensome than the prior process. Applicators will be required to file a one-time registration with the Department. The registration process will allow the requisite documents to be filed by mail and will not require applicators to travel to the Department's offices. The key element of the registration process will be a disclosure of the sites which each applicator intends to use. This information will be important in assisting the Department in matching applicators to sites in the future. Applicators wishing to use new sites will need to amend their previous filing with a supplemental registration.

Initially, applicators will be asked to write a letter containing the elements listed in the rule. Over the longer term, the Department intends to prepare a registration form to make the process easier.

The rule imposes a deadline for registration to ensure that applicators act in a timely manner and that the Department's inventory is accurate and complete as soon as possible. The Department will respond to requests for registration within 15 days of receipt. No interruption of activity should occur as a result of this registration process.

IV. Pollutant Concentrations

The proposed rules regulate ten metals commonly found in biosolids. One of the leading causes for concern regarding these metals is their potential to accumulate in the soil. In the past, the state has set very stringent quality limits on the amount of acceptable metals in biosolids. The proposed rules are based on a recent U.S. EPA's risk assessment which determined that some of the metals in biosolids do not transport easily and are not readily taken up by plants which receive biosolids applications. These metals may be safely applied at higher levels. As a result, some of the proposed standards are less stringent than those previously required by the Department.

The state is proposing two types of metals limits. The first type of limit regulates the amount of a particular metal in the biosolids over a set period of time. These requirements are referred to as "concentration" limits. These limits restrict a metal's strength per unit of biosolids.

The second type of limit ensures that the repeated land application of biosolids is safe. This method controls the rate at which these same metals can be applied to the land. This "loading limit" restricts the absolute amount of metals which will be placed on a parcel of land and is similar to the regulation of pollutant mass in wastewater. EPA has also used both of these approaches in its Part 503 regulations.

Before establishing the federal regulations, U.S. EPA conducted a nationwide study of sewage sludge quality. It held numerous public meetings, reviewed data from scientific reports, and sought information from well known, technical experts. The Agency examined the toxicity and persistence of potential pollutants of concern and modeled 14 separate pathways and exposure levels for each of these pollutants in land application situations. Each standard was set so as to protect an identified "maximum exposed individual." For more detailed information on this risk analysis, see *U.S. EPA Technical Support Document for the Land Application of Sewage Sludge*, Volume I, PB93-110575, 1992 and Volume II, PB93-110583; and see *Human Health Risk Assessment for Use and Disposal of Sewage Sludge*, PB93-111540, available from the National Technical Information Service (NTIS), at (703) 487-4650.

Similar to EPA, the state is proposing to establish a threshold concentration above which land application may not occur. These concentration limits are set out in Table 1 of R18-13-1505. The concentrations (obtained using a grab sample) represent minimally-acceptable levels of the metal which can be safely added in a single application. These limits are referred to as "instantaneous" since each sample must be in compliance with the limits. Biosolids exceeding this quality will be in violation if land-applied. In order to legally apply these biosolids, they must first be mixed with other material to lower the concentration. Alternatively, the material may be disposed of using alternative means such as surface disposal or incineration. Furthermore, where biosolids are applied in violation of these standards, remedial action may be necessary to ensure that public health is adequately protected.

The Department recognizes that composting biosolids is the highest and best use for the material. At the present time there are over 200 biosolids composting facilities nationwide. Several of these are located in Arizona. Composts have been known to sell for $85-$120 per ton and up to $50 for per cubic yard. The Department further recognizes that tracking the loading rates for composted material may be difficult if not impractical since many composts are sold to third parties who transport and use the material without any oversight or control on the part of the producer. Therefore, in order to encourage composting, and maintain a minimum standard to ensure protection of the public health, the Department is proposing to stringently regulate the quality of the composted biosolids rather than its final use. Consequently, in addition to the instantaneous concentration limits discussed above, the average-monthly quality of composted biosolids will also be tracked and regulated (see Table 2 of R18-13-1505). Persons who prepare biosolids composts which are a poorer quality than the standards allow, will be considered in violation until additional sampling demonstrates a return to compliance. Composts satisfying these quality limits need not track or demonstrate compliance with the loading rate requirements set out in Tables 3 and 4 of this Section, or with the management practices set out in proposed R18-13-1507. The public is specifically asked to provide comment on this regulatory scheme.

For non-composted biosolids, the rules propose two types of metals loading rates in addition to the instantaneous concentration limits in Table 1. Loadings of non-composted biosolids will be tracked on 1) annual and 2) cumulative or "lifetime" bases. These limits are set out in Tables 3 and 4 of R18-13-1505. This dual frequency serves several purposes. First, it alerts the state as to those sites which are used by more than one applicator. Second, it serves as an early warning for sites which are approaching the cumulative loading limits.

EPA established its cumulative limits by assuming that 1) land application would occur on a parcel of land for up to 100 years and 2) that the average application rate might be up to 10 metric tons of biosolids per hectare each year [Acres are converted to hectares by multiplying the number of acres by 0.40. Conversely, hectares are converted to acres by multiplying the number of hectares by 2.47.]. EPA's national survey concluded that the average application rate was seven metric tons per hectare at agricultural sites, 18 metric tons for public contact sites, 26 metric tons for forest lands, and up to 74 metric tons for reclamation sites.

The 10 metric ton assumption creates a total lifetime loading rate of 1000 metric tons. EPA, by converting the metric tons to kilograms, then calculated a cumulative concentration level which would continue to protect exposed individuals over the entire

100-year site life. In a similar manner, EPA assumed that sites receiving bagged sludge products had an average site life of 20 years rather than 100. It then used one-fifth of the cumulative concentration to set the annual limits.

The state does not believe that this dual approach is burdensome since the annual applications must be recorded and tracked in order to determine compliance with the cumulative loading rates. However, the Department is seeking comment on this point as well as the need to regulate additional pollutants of concern at this time.

It should be noted that on November 15, 1994, several of the Part 503 limits were remanded to the EPA for further study and consideration [see *Leather Industries of America Inc. v. EPA*, 39 ERC 1865, (DC Cir.)]. The case involved a review of the standards set for chromium and selenium. Since portions of the federal regulations have been remanded, the Department is not including the chromium limits in this proposal. However, in the event EPA repromulgates limits for chromium, the Department will review its rules as well. In addition, since EPA has not created any variances to its standards, the state is not proposing variances today. However, members of the public who disagree are encouraged to comment on this point and suggest specific alternatives.

A discussion of the metals sampling requirements appears in Section X below. For more detailed information on EPA's risk analysis for these and other pollutants of concern see the two-volume *Technical Support Document for Land Application*, PB93-110575 and PB93-110583, available from NTIS, 5285 Port Royal Road, Springfield, Virginia 22161.

V. Pathogen Controls

Pathogenic organisms are also of great concern to the Department. These microbes are commonly found in biosolids and can spread disease and illness if left uncontrolled. The state proposes to impose a two-tiered approach toward controlling pathogens. In the first, referred to as Class A Biosolids, the pathogens are treated to a level which no longer warrants any concern. Biosolids satisfying these requirements may be safely placed on any site without any restrictions on public contact, grazing, or harvesting crops at that site. All biosolids to be bagged or placed in a similar container, and which are intended for home use, must be treated to the Class A level.

Biosolids which meet the second tier of control, referred to as Class B Biosolids, have been treated to an acceptable threshold level for land application. However, in order to ensure that public health is protected, land receiving Class B biosolids is subject to additional restrictions (see R18-13-1508). The state anticipates that biosolids preparers and applicators will treat to the Class A levels whenever possible in order to avoid the need to observe and record compliance with the land restrictions. Biosolids which do not meet at least Class B requirements may not be land-applied in the state of Arizona.

The Department is willing to provide as much flexibility in today's rule as is prudent. Both Class A and Class B establish minimum organism densities. However the methods used to achieve compliance may vary. The rules propose ten alternative treatment techniques which have proven to reach the required Class A densities. Similarly, there are six proposed techniques for preparers and/or applicators to reach Class B levels. The public is specifically asked to provide comments and data supporting other alternatives which are or could potentially be used to adequately reduce pathogens in Arizona.

A discussion of the pathogen sampling requirements appears in section X below. For more information on the proposed pathogen treatment alternatives, see EPA's *Technical Support Document for Pathogen and Vector Attraction Reduction in Sewage Sludge*, # PB93-110609.

VI. Management Practices

The management practices set out in Section R18-13-1507 establish requirements to protect public health and the environment from potential adverse effects of biosolids application other than those associated with metals accumulation and pathogens. Generally, these requirements apply only to sites where bulk biosolids are being applied rather than to home use.

The management practices are intended to prevent the biosolids from accidently being discharged to surface and ground waters, minimize odors, and ensure that property lines are respected. In addition they require preparers to inform home users of the proper application of the material.

More specifically, the proposed rules prevent the use of application sites where the biosolids may run off into surface waters. This includes lands with steep slopes and frozen or snow-covered ground. Similarly there are buffer zones imposed between the biosolids application and any nearby water channel. The Department is willing to extend some site-by-site flexibility in the application of these requirements providing the applicator can, in advance, demonstrate that the biosolids will not end up in the waterway. For example the environmental benefits of using biosolids to stabilize, repair, and revegetate a stream bank may outweigh any potential concern that some of the biosolids may reach the stream.

To ensure the protection of groundwater, there are minimum depths to an aquifer which must be observed unless the applicator seeks and obtains a groundwater protection permit from the Department. In addition management practices address buffers with wells, concerns on over-irrigation, crop growth, and the need to apply only enough biosolids to satisfy the agronomic rate (nitrogen needs) of the crops or vegetation at the site. Since excess nitrogen - that not used by the plants - may migrate through the water column and find its way to the aquifer, the observance of agronomic rates is particularly important for ensuring groundwater integrity. For the convenience of the reader, an example agronomic rate calculation is set out in Appendix B to the rules.

In its previous guidelines, the Department had encouraged appliers to disk or incorporate biosolids into the soil at each site. We are not proposing to require that biosolids be incorporated into the soil in today's rule, principally to facilitate multiple biosolids applications on agricultural lands (i.e., after a crop is planted) as well as applications to non-agricultural lands which may not be

amenable to incorporation. An exception to this rule is proposed to mandate incorporation when biosolids are applied within 1000 feet of a dwelling. However the Department is interested in receiving public comments on whether it should require disking or incorporation of all sites in the final rule.

In the case of reclamation the Department has determined that the benefits of restoring the productive capacity of the land outweigh the possible temporary adverse affects of a brief nitrogen pulse to an aquifer. However the public is also invited to specifically comment on this conclusion.

This portion of the biosolids rules also references the Federal Endangered Species program as well as the Arizona Department of Agriculture's Native Plants Program. The list of federal threatened and endangered species can be found at 50 CFR 17.11 and 17.12. It is important to note that biosolids must be applied in accordance with these programs regardless of whether they appear in this rule or not. Our reference is primarily intended for the convenience of the reader.

Persons who bag biosolids or place them in a similar container are required to develop a label or information sheet to be provided to the user. This label should, among other things, inform the user on the proper use of the material, including the application rate (i.e., for use in a lawn spreader).

The Department is particularly interested in the anticipated burdens these practices may create as well as the need for additional management practices to protect public health and the environment.

VII. Site Restrictions

As noted in Section V above, application sites which receive Class B Biosolids must comply with several site and access restrictions in addition to the management practices discussed in Section VI. These restrictions, which include waiting periods for crop harvesting, grazing, and public access, are intended to protect humans, livestock, and wildlife from exposure to the pathogens until they no longer cause any concern.

Applicators must inform landowners and leaseholders of these restrictions. The state is requesting that applicators obtain proof that such information is conveyed to the landowners and leaseholders by obtaining a brief statement to that effect for the site file maintained by the applicator. Similarly the landowner or leaseholder is expected to inform subsequent owners or leaseholders if any of these restrictions will remain in effect after a transfer of the property.

Microbiological organisms will no longer be viable after the waiting periods set out in the rule. To avoid these waiting periods, preparers and applicators are encouraged to treat biosolids to a Class A level. Persons found in violation of these restrictions are in violation of Article 15 and are subject to enforcement under the law and these rules.

VIII. Vector Attraction Reduction

Vectors are rodents and insects which may transport pathogenic organisms to other locations where humans, livestock, and wildlife may be present. Vectors are naturally attracted to biosolids due to the high content of organic matter which serves as a food supply for the vector. The purpose of the proposed requirements set out in R18-13-1509 is to reduce the attractiveness of the biosolids by stabilizing the organic matter; that is by halting or minimizing its decomposition.

The Department is proposing to allow vector attraction reduction to occur via any one of 11 alternatives. Two of these alternatives, incorporation and injection, are undertaken at the application site. They may be particularly helpful for agricultural sites which need to be plowed or disked shortly after or during application.

All biosolids intended for home use must meet vector attraction reduction requirements before being placed in the bag or similar container.

IX. Transportation

The proposed rules will affect any person transporting biosolids within the state of Arizona. This includes biosolids generated, blended, or produced in another state and transported across the state line by truck or rail. All transporters are expected to take adequate steps to ensure that spillage and leakage does not occur during transport.

Similarly, in the event a spill occurs, the transporter is expected to take mitigation and remediation steps to correct the problem as well as notify the Department of the circumstances surrounding the spill. The Department is not proposing a minimum reportable quantity (e.g., only spills of 5 gallons or more need be reported) at this time but is interested in public comment on this question.

X. Self-Monitoring, Recordkeeping, and Reporting

As with other environmental programs the Department is unable to observe application activities at every site in the state. Similarly it is impossible for the Department to test the quality of all biosolids prior to their application. While the Department intends to conduct random inspections of land application operations and periodically sample biosolids quality, we must continue to rely on compliance data collected and submitted by the regulated community.

While the quality of biosolids is relatively constant, it is possible for the quality to change from time to time, particularly as the wastewater treatment process changes or extraordinary events, such as an industrial spill, or seasonal industries discharge

pollutants to the sewer. R18-13-1512 establishes certain minimum self-monitoring frequencies during which biosolids quality is to be measured.

The proposed monitoring frequencies correspond to the amount of biosolids that is land-applied during each calendar year. In the event a preparer's biosolids are not land-applied during the calendar year (e.g., they are stockpiled or held in a lagoon), the preparer need not sample the quality of its biosolids under today's proposal. Similarly if an applicator does not apply biosolids in a given year, that applicator would have no self-monitoring obligations. The amount of biosolids is calculated on a dry-weight basis.

When biosolids are stockpiled for most or a substantial part of the year but subsequently land-applied, preparers and applicators may choose to sample for metals as the pile accumulates (e.g., once a month) or sample all at once prior to land application. In the event the latter method is selected, 12 separate composite samples should be taken from the stockpile. This is done by separating or dividing the pile into 12 equal segments and extracting core samples from varying locations and depths around the pile (or throughout the lagoon). The cores should be combined for each segment and then the resulting 12 samples analyzed separately. These analyses should ensure that, taken together, these samples are representative of the overall quality of the biosolids.

The Department is particularly interested in obtaining public comment on the need and desirability of monitoring parameters in addition to those set out in R18-13-1505. This additional monitoring data may be used to establish future limits in R18-13-1505. The Department is not establishing any limits on the quality of these additional parameters at this time. In the event such "monitoring only" requirements are established, a preparer or applicator would not be considered in violation of this requirement (regardless of the measured concentration) unless the preparer or applicator fails to do the analysis itself. Comments on specific parameters of potential concern will be the most helpful.

Pathogen and vector attraction sampling need not occur throughout the year. In fact, in the case of pathogens, sampling should occur as close to land application as possible in order to ensure that pathogen regrowth does not occur. Since the Department believes there is no need to conduct periodic sampling for these parameters, we will be satisfied if the sample is taken two to three weeks prior to application. The two- or three-week period is needed to ensure adequate time to obtain sampling results. Preparers or applicators who sample late or discover violations after the biosolids are land-applied will not be able to raise their own untimely analysis as a defense to an enforcement action.

The proposed rules allow a preparer or applicator to analyze biosolids samples using any of three analytical methods. These include the Arizona Department of Health Services (DHS) methods for the analysis of solid waste, DHS methods for wastewater analysis, and the federal methods set out in 40 CFR 503.8. In some cases, biosolids analysis may need to use methods from all three sources. For example the federal Part 503 methods should be used for analysis of enteric viruses, helminth ova, salmonella bacteria, and specific oxygen uptake. These methods may also be used for inorganic (metals) pollutants, fecal coliforms, and solids. The state wastewater methods, set out in A.A.C. R9-14-609, should be used for measuring nitrogen. The applicable DHS solid waste and wastewater methods may also be used for the metals and fecal coliforms analysis.

The proposed rules require other operating parameters to be measured and tracked over time. Several of these, such as the time and temperature of pathogen and vector control treatment, must be collected on a continuous basis. For others, a one-time description of the steps taken is all that is necessary. Still other requirements may be recorded using both approaches. For example, the description of how public access is denied can be prepared on a site-by-site basis, if different, or on a generic basis if always the same.

Since the biosolids self-monitoring data will be submitted as compliance data, their integrity must be beyond question. For this reason the Department is proposing that standard chain-of-custody procedures be used to identify and track the sample from collection through analysis. These procedures should identify the time and date of sample collection and analysis, the individuals involved, and a chain of possession or control of the sample to ensure that tampering does not occur at any stage.

The proposed rules also require that sampling records, along with other data on the preparation, application, and site management, be retained for a period of five years. However documentation on cumulative loadings to specific application sites shall be retained indefinitely.

In the event a preparer or applicator samples quality more frequently than the minimum set out in the rules, the additional samples must also be reported to the Department. The purpose of this requirement is to prevent members of the regulated community from selecting favorable results over results showing noncompliance.

For more information on self-monitoring and recordkeeping, please see *Land Application of Sewage Sludge: A Guide for Land Appliers on the Requirements of the Federal Standards for the Use and Disposal of Sewage Sludge*, 40 CFR 503, U.S. EPA, EPA/831-B-93-002b, Office Regulatory Enforcement and the Office of Compliance, December 1994; *Preparing Sewage Sludge for Land Application or Surface Disposal*, U.S. EPA, Office of Water, EPA 831B-93-002a, August 1993; and *Control of Pathogens and Vector Attraction in Sewage Sludge*, EPA-625/R-92/013, December 1992. These are available from the EPA Regional office and the EPA Water Resources Center in Washington, D.C.

The proposed rules also require reporting by members of the regulated community. On an as-needed basis, preparers of biosolids will provide applicators with information necessary to comply, including data on metals concentrations, pathogen treatment,

and vector attraction reduction activities. Recognizing that each circumstance may be different, the Department is not specifying the exact information to be exchanged between the preparer and the applicator.

Applicators using a site which has reached 90% or more of its cumulative site life under Table 4 of R18-13-1505 are also required to report that information to the Department. This information is critical in preventing a subsequent applier from exceeding the cumulative loading for the site.

All transporters are required to report spills to the Department as soon as possible after a spill occurs. Similarly, applicators must inform landowners and leaseholders of the metals concentration, pathogen treatment levels (i.e., Class A or B), and loading rates used on each site. Furthermore, in cases where Class B Biosolids have been applied, applicators will provide the Department with evidence that the landowner or leaseholder has been informed of the site restrictions.

In addition to the above described "as-needed" reports, the Department is also proposing that, on February 19 of each year, all applicators report on their activities for the previous calendar year (i.e., January through December). On this date all self-monitoring data will be submitted along with the amount of biosolids applied and the locations of each site. Note that nothing in this reporting frequency restricts or precludes the Department from inspecting preparers or applicators and reviewing and copying these records at any reasonable time.

The Department has selected this date for the annual report for two reasons. First, the Department believes that approximately seven weeks is sufficient time for preparers and applicators to compile their records into a report. Second, this date coincides with the date federal reports are due from Class I facilities under Part 503. The Department solicits specific comment on this reporting date and any proposed alternatives. For the convenience of the regulated community, the Department expects to produce and distribute a reporting form for these annual reports.

XI. Enforcement

When adopted, the proposed rules will allow Department personnel to enter and inspect the records of persons regulated by these rules. The proposed rules also expressly provide for inspections of preparer's facility or the land on which the biosolids has been applied. The rules also specifically allow the Department to copy relevant records and collect samples of biosolids quality. These measures are necessary to maintain a viable compliance monitoring program which independently verifies the self-monitoring information reported by the applicator.

When adopted, the proposed rules will be self-implementing, that is, enforceable in the absence of a permit or other written communication from the Department. The failure to comply with any provision of these rules is considered a separate and distinct violation. Furthermore, in the event such noncompliance is ongoing or continuous, each day of continued violation constitutes a separate and distinct violation.

The proposed rules require applicators to take all reasonable steps to minimize any adverse consequences of violations. These mitigation steps are expected to be performed immediately upon discovery of the violation and need not be ordered by the Department.

The Department intends to enforce violations of these regulations subject to the authority provided to it under the enforcement provisions of the solid waste management laws, set out as A.R.S. Title 49, Chapter 4, Article 5. Violations subject the offender to injunctive relief to compel compliance, civil penalties of up to $1,000 per day per violation, and possible criminal prosecution and imprisonment as a Class 2 misdemeanor. However it should be noted that the federal Clean Water Act authorizes civil and criminal penalties of up to $25,000 per violation per day for violations of similar federal requirements.

5. **A showing of good cause why the rule is necessary to promote a statewide interest if the rule will diminish a previous grant of authority of a political subdivision of this state:**

Not applicable.

6. **The preliminary summary of the economic, small business and consumer impacts:**

This section summarizes the Department's analysis to date on the anticipated economic impacts of today's proposed biosolids rules. This analysis is required before a rule can be finalized. The purpose of the analysis is to ensure that state agencies have considered the economic consequences of regulatory decisions prior to the adoption of rules.

The impacts discussed below are based on information available to the Department at the time of this proposal. During the public comment period, the Department intends to conduct a survey of biosolids generators, preparers, transporters, applicators, and landowners in order to obtain more specific data on these impacts. Persons who would like to review this survey, the responses to it, or the statistical methodologies used to interpret the data may do so at the Department's offices.

Persons having any information which is relevant to these issues are asked to forward such data to the Department during the public comment period. The Department will use the information it collects to complete a final analysis of the economic impacts which will be published with the final rule. Therefore, the final Economic, Small Business, and Consumer Impact Statement may vary from the tentative conclusions set out below. The remainder of this statement is organized as follows:

I. Overview of Economic Impacts
II. Discussion of Specific Impacts
III. Preliminary Conclusions

I. Overview of Economic Impacts
As noted in Question 4 of this preamble, the rules are permissive in nature. The Department recognizes the soil enhancement properties of biosolids and encourages their beneficial reuse. However we are not requiring all generators of biosolids to land-apply this material. In fact there are several alternatives which are available to every community. For example, a large volume of biosolids continues to be sent to landfills across the state.

While the Department encourages land application as an environmentally sound practice in the nature of recycling, we are well aware of our responsibility to protect public health and natural resources from poor quality biosolids. Therefore we are proposing a set of rules to ensure that land-applied biosolids meet a threshold quality level prior to application.

Biosolids generators are only subject to these requirements when they, in fact, land-apply. Where sewage sludge or biosolids are not land-applied, these rules have no impact, financial or otherwise, on the generator. For example, a community which stockpiles or lagoons all its biosolids for several years has no obligations under this rule until such time as the material in the stockpiles or lagoons is removed and land-applied.

Another basic consideration affecting the economic impacts of today's proposed rules is the similar federal regulatory program. The U.S. EPA promulgated its sewage sludge use and disposal regulations, including requirements for land application, on February 19, 1993 [58 Fed.Reg. 9248]. These rules have been in full force and effect and enforceable since February 19, 1994.

Since the Federal Government also imposes the same pollutant standards, pathogen treatment, vector attraction reduction, and many of the same management practices and self-monitoring and recordkeeping requirements, nearly the entire cost of the state rules is already being borne by persons subject to these requirements. By comparison, the additional incremental costs of requirements imposed by the state are not expected to be very burdensome.

II. Discussion of Specific Impacts
In order to establish preliminary estimates of the benefits and costs associated with today's proposed rules the Department conducted a pilot survey of biosolids generators, appliers, and landowners. The following tentative analysis is based in part on the responses of these persons. The ten participants employ a total of 3,347 people, 674 (20%) of whom work exclusively in biosolids management. This suggests a potential statewide payroll in the millions of dollars which may, in turn, have a significant multiplier effect on the state's overall economy. The Department has identified the following classes of persons as directly affected by the proposed rules:

A. State Agencies and State Revenues.

1. *The Arizona Department of Environmental Quality (the Department).* The Department is the agency charged with the implementation and enforcement of these proposed rules.
   a. BENEFITS: Adoption of these rules will enable the Department to better accomplish its mission to protect public health and the environment. At this time the Department does not anticipate assessing a fee for implementation or enforcement of these rules. However, as discussed further below, 80% of the permit-application fees charged by the Department of Agriculture for the manufacture and distribution of commercial fertilizers is credited to the Water Quality Assurance Revolving Fund (WQARF) administered by the Department of Environmental Quality. If the Department of Agriculture determines that any land-applied biosolids satisfy the definition of commercial fertilizer, the WQARF Fund will increase in size. Thus the Department may indirectly derive a benefit. Otherwise no direct monetary benefits are expected to accrue to the Department.
   b. COSTS: Department personnel will implement the proposed rules by conducting public outreach and disseminating information, responding to registration requests, and providing technical assistance. Compliance will be assessed by reviewing self-monitoring reports, maintaining a data base, conducting inspections, and collecting biosolids samples and, where warranted, pursuing enforcement actions against persons in violation of these requirements. In addition, Department personnel will work closely with interested federal and local government agencies.

      It is estimated that implementation and enforcement of these rules will require two full-time equivalent (FTE) employees. The additional FTE should consist of one Environmental Health Specialist II and one Research and Statistics Analyst I. The total cost for this additional staff (including initial, non-recurring expenditures for equipment and other costs) is estimated to be approximately $99,106 annually. In addition, the Department estimates that an initial, non-recurring equipment expenditure of $27,000 will also be needed in the first year. This program will be funded by an EPA grant (Consolidated 104 B3, Grant 610-40); and therefore these costs will be borne by taxpayers.
2. *The Arizona State Land Department (Land Department).* The Land Department may be affected by these rules because they manage, in trust, approximately 14,400 acres of state lands on which biosolids are currently applied (primarily in Yuma and Pima Counties). In such situations the Land Department will be considered the "landowner" under today's proposed rules.
   a. BENEFITS: The land application of biosolids will result in a higher quality soil which is more productive and, therefore, increases the value of the property. Although the direct, short-term beneficiary of the biosolids application will be a tenant or lessee of the state land, the Land Department will ultimately benefit since the value of the lands under its control will increase. The exact value of these productivity increases is difficult to predict and will accrue on a parcel-by-parcel basis. It is unlikely that the revenue from leasing lands will increase since the price of leases is established by statute.

b. COSTS: Since the Land Department will not be applying biosolids, there will be no costs to it.

3. *The Arizona Department of Agriculture (Agriculture).* The Department of Agriculture has regulatory jurisdiction over the manufacture and use of *commercial fertilizers*. This authority allows the Department to issue permits (including charging a $125.00 application fee), conduct inspections, and assess a $0.25 fee levied on a per-ton basis. While today's proposed rule neither diminishes nor enhances the Department of Agriculture's authority, biosolids which satisfy the Department of Agriculture's definition of commercial fertilizers may be subject to these requirements.

4. *State agencies that generate and treat domestic wastewater.* These agencies will incur costs similar to other municipal or privately owned treatment works which generate biosolids. These agencies, including Game and Fish, the Department of Corrections, the Department of Transportation, and the State Parks Board will be considered generators and preparers under these rules [see the costs and benefits discussion regarding political subdivisions below].

B. Political Subdivisions

Counties, municipalities, and other quasi-government entities (e.g., sanitation districts) are owners/operators of publicly owned treatment works which generate biosolids. Five biosolids generators participated in our preliminary survey. The population served by these generators is approximately 2,451,000 which is more than 60% of the state's 1994 population according to the Population Technical Advisory Committee (POPTAC) to the Department of Economic Security.

1. *Unique Factors.* Wastewater treatment plants in Arizona vary greatly in their circumstances. The reader should note that costs and benefits to political subdivisions will be influenced by factors including, but not limited to, the following:
   a. The costs of alternative methods of biosolids disposal (e.g., landfilling or incineration versus land application);
   b. The need and cost of contracting for biosolids services;
   c. Individual circumstances such as how much pretreatment is required and access to land on which the biosolids could be applied; and
   d The availability and cost of laboratory analysis.
2. *Costs and Benefits of Political Subdivisions.*
   a. BENEFITS: Implementation and enforcement of these rules will result in increased public health and safety and a decrease in odors and other potential nuisances commonly associated with sewage sludge disposal. The pollutant concentrations, pathogen treatment, and management practices are intended to eliminate any adverse effects and exposures which might otherwise result from unregulated disposal activities. Furthermore, by encouraging land application of biosolids, the Department intends to free-up scarce landfill space which will extend the lives of solid waste landfills, many of which are owned and operated by political subdivisions and paid for by their citizens.
   b. COSTS: The costs born by political subdivisions will depend on whether these entities merely generate biosolids or whether they are also directly responsible for land application.
      i. Political Subdivisions Which Are Generators Only. These entities will be held responsible for the basic quality of the biosolids they produce. In order to achieve and maintain compliance with the pollutant concentrations, these entities may need to develop pretreatment controls on the amount of metals contributed to their wastewater influent. Similarly, most political subdivisions will be responsible for undertaking pathogen treatment. While the Department encourages biosolids treatment which satisfies Class A criteria, the political subdivisions need only, at a minimum, treat to Class B levels. Political subdivisions which produce a bagged product will also be required to adequately label the biosolids product. These requirements are identical to those imposed by the Federal Government. Therefore political subdivisions should already be incurring these costs.
      ii. Political Subdivisions Which Are Also Land Appliers. In addition to the costs in subsection (i) above, political subdivisions which are land-applying their biosolids directly will be expected to comply with the other requirements proposed in Article 15, including registering with the Department, compliance with the various management practices set out in Section R18-13-1507, including public notice of new land-application sites, recordkeeping, and annual reporting requirements. As is the case with subsection (i) above, many of these requirements also appear in federal law. The cost of the additional, state-only requirements (e.g., registration and reporting) is expected to be nominal. The Department believes these additional costs may be offset by the flexibility offered by today's proposed rules and discussed further below. However, in the event the costs of land applying biosolids rises, these costs will be paid from water/sewer fees or local taxes.

      We note that the Department believes that this comparative cost of landfilling and incineration versus land application will show land application to be the most cost-effective method of the three alternatives. This issue will be more fully researched during the public comment period.

C. Private Sector Businesses and Individuals

Today's proposed rules will affect members of the private sector differently depending on their interest or involvement with biosolids.

1. *Owners/Operators of Private Wastewater Treatment Plants.* The owners/operators of private wastewater treatment plants are generators and, if they engage in land application (as opposed to contracting such activity out to a third party), they will also be considered applicators.

a. BENEFITS: The proposed rules make land application of biosolids a more appealing option for the private sector. The rules are intended to encourage land application as a preferred alternative to landfilling or incinerating the material. The rules are more flexible than previous Department requirements. For example, several of the pollutant-concentration limits proposed today are less stringent than pollutant concentrations which the Department has required in the past. The Department believes these less stringent pollutant limits are justified based on a risk assessment conducted by the U.S. EPA. Similarly the rules allow application to occur on any land in the state. The previous requirements restricted land application to non-food crop, agricultural lands (e.g., cotton fields). Furthermore, unlike previous requirements, the rules do not require biosolids to be incorporated into the soil at all land-application sites. The Department anticipates that this flexibility (e.g., increased application opportunities) will more than offset any additional costs which may arise from the proposed rules.

b. COSTS: The costs will be similar to those incurred by the political subdivisions. While private sector capital improvements are financed differently from government debt, it is likely that the financial impacts of the rules, if any, will also be funded from increases in fees charges to wastewater customers.

2. *Private Sector Transporters/Haulers and Applicators of Biosolids.* Two transporters/land appliers participated in the preliminary survey.

a. BENEFITS: By providing a flexible approach, the proposed rules are, over time, likely to increase the amount of biosolids being land-applied in Arizona. In so doing the rules should result in an increase in the demand and business opportunities for this portion of the private sector. This expansion should lead to the creation of additional jobs and higher profits.

b. COSTS: As is the case with political subdivisions directly engaged in the transport and land application of biosolids, the proposed rules should result in modest increases in the cost of doing business. For example, the public notice of planned application sites is estimated to cost $200 per occurrence. Additional self-monitoring tests could be $600 per month. Vehicle coverings, if needed, may be $3,000 per vehicle. Leakproofing may cost up to $4,000 per vehicle. Spill-response costs may be up to $20 per gallon spilled and reporting spills may cost up to $100 per occurrence. The costs attributable to complying with the management practices may be $10 per acre and recordkeeping requirements may be as high as $50,000 per year depending on the number and complexity of the records. Since most of these expenses are mandated by federal law, it is difficult to isolate the incremental costs created by new state requirements. This issue will be researched during the public comment period. It is expected that any actual increase will be more than offset by the increase in business activities. Moreover, to the extent costs do rise, they will be passed on to the company's customers.

3. *Owners or Leaseholders of Land.* Owners and leaseholders of both public and private lands will be affected by biosolids applications to that land. These entities include but are not limited to farmers, ranchers, forestry land managers, owners, and operators of parks, golf courses, sports fields, mining sites, construction sites, cemeteries, and horticultural nurseries. It is noted that, according to the Arizona Agricultural Statistics Service, farming and ranching are practiced on approximately 36 million acres in the state. The average size farm or ranch is 4,557 acres (ten times as large as the national average size farm or ranch). Three of the participants in the preliminary survey were landowners or leaseholders who own or lease a total of 13,140 acres (49% of which has had biosolids applied to it for the past six years.

a. BENEFITS: Landowners and leaseholders will benefit from the increase in productivity of their soil and potential decreases in the amount of fertilizer and irrigation necessary to grow a crop or graze livestock. Biosolids have been known to provide up to $140 worth of needed soil amendment per acre. All of the preliminary respondents noted an increase in their crop yields of up to $30 dollars an acre. The use of biosolids has been known to reduce fertilizer costs by up to 23% and, with additional decrease in herbicide and pesticides, save landowners up to $170 per acre. The participants in our preliminary survey confirmed reduced fertilizer costs of between $5 and $93.75 per acre as well as reduced water needs. As noted above, the proposed rule allows land application on acreage used to grow food crops instead of on feed and fiber crops exclusively. In addition the Department anticipates substantial benefits associated with land application to reclaim despoiled and disturbed lands (e.g., mining sites). Finally owners of disturbed lands may find that reclamation using biosolids is up to $2,600 cheaper per acre.

b. COSTS: Direct costs to landowners and leaseholders should be nominal with the exception of lands receiving Class B Biosolids. These lands will be subject to the site restrictions set out in R18-13-1508. However, since federal law imposes these same site restrictions, today's proposal should not result in any increased costs beyond those already incurred.

4. *Contractors and Consulting Companies.* Both government and private wastewater treatment plants may choose to use a private management company to treat, test, transport, and/or land-apply their biosolids.

a. BENEFITS: As in the case of contractors providing transportation and land application services, private companies which operate the treatment system, sample the biosolids, and/or conduct the chemical and pathogen analyses should see an increase in business opportunities and an expansion of profits.

b. COSTS: No direct costs are associated with the rules. Consultants and contractors will need to acquire necessary expertise and equipment if they desire to offer these services to wastewater treatment plants. These business decisions are independent of today's proposed rules.

5. *Small Businesses.* The rules are not expected to have a direct impact on small businesses beyond those in the business of biosolids generation, treatment, analysis, transportation, or land application, the impacts on which are described above.

D. Consumers and the Public.

1. *Homeowners and Residents.* Since the entire resident population generates domestic sewage, the public at large will, at least indirectly, be affected by today's proposed rules.
   a. BENEFITS: The public will benefit from more stringent health and safety standards, and greater efficiencies in biosolids management by wastewater treatment plants. Metals, pathogen treatment, vector attraction reduction, and management practices operate to ensure that the population is not adversely exposed to harmful chemicals, viruses, or microbes (see *"Municipal Wastewater Sludge: The potential public health impacts of common pathogens", Journal of Environmental Health,* Vol. 51, No. 3, Jan./Feb. 1989). Furthermore the public could see a decrease in water/sewer services fees in those areas where land application is a less expensive alternative to landfilling and other disposal options. Finally, by encouraging biosolids land application, the life expectancy for landfills should be extended and the costs associated with siting, construction, and operation of a new facility will be avoided or substantially delayed.
   b. COSTS: In the event some areas experience nominal increases due to compliance costs, residents will pay for any such increased costs in the form of higher water/sewer bills passed on to them by wastewater treatment plant owners/operators. For populations served by septic systems, changes in septage cleaning may cause costs to change (i.e., increase or decrease). However, in other instances, costs attributable to this rule will be difficult to disaggregate from costs borne for other purposes such as other operating costs and debt retirement for existing municipal wastewater or other capital improvement projects.
2. *Food Consumers.* Consumers will benefit from lower prices of farm produce if farmers choose to pass on the cost savings and productivity benefits described above.
3. *Recreational Consumers.* Consumers who participate or sponsor selected activities like golf or other sports events or purchase products from horticultural nurseries in which biosolids are used could see a decrease in their costs if landowners/operators choose to pass on the economic benefits of land application described above.

III. Preliminary Conclusions

Given the nature of the proposed rules and the fact that the Federal Government has already imposed similar duties, obligations, and responsibilities on the same regulated universe of people, and given the potential benefits of encouraging land application to the citizens of Arizona, the Department has tentatively determined that today's proposed rules are cost effective in accordance with A.R.S. § 41-1052(C)(3). This preliminary conclusion will be reassessed during the public comment period.

7. **The name and address of agency personnel with whom persons may communicate regarding the accuracy of the economic, small business, once consumer impact statement:**

Name: Martha L. Seaman
Address: Department of Environmental Quality
3033 North Central Avenue, Eighth Floor
Phoenix, Arizona 85012-2809
Telephone: (602) 207-2222 or (800) 234-5677 (Arizona only)
Fax: (602) 207-2251

8. **The time, place and nature of the proceedings for the adoption, amendment, or repeal of the rule or, if no proceeding is scheduled, where, when and how persons may request an oral proceeding on the proposed rule:**

Persons interested in submitting written comments on today's proposal should postmark or fax them to the person identified above no later than 5 p.m. on Friday, September 1, 1995.

A series of public workshops and hearings has been scheduled to discuss today's proposal and to receive public comments on suggestions for improvements. These meetings are scheduled for the following times and locations:

Date: August 14, 1995
Time: 10 a.m. to 1 p.m.
Location: Pima Association of Government Offices
Room 405
177 North Church Avenue
Tucson, Arizona

Date: August 14, 1995
Time: 6 p.m. to 9 p.m.
Location: Unified School District Auditorium
315 West Fifth Street
Bowie, Arizona

Date: August 16, 1995
Time: 2 p.m. to 5 p.m.
Location: Department of Environmental Quality
Public Meeting Room
3033 North Central Avenue
Phoenix, Arizona

Date: August 17, 1995
Time: 1 p.m. to 4 p.m.
Location: Coconino County Health Department Offices
2500 North Fort Valley Road
Flagstaff, Arizona

Date: August 18, 1995
Time: 1 p.m. to 4 p.m.
Location: City Council Chambers
180 West First Street
Yuma, Arizona

The Department is committed to complying with the Americans with Disabilities Act. If any individual with a disability needs any type of accommodation, please contact the Department at least 72 hours before the hearing. Persons interested in presenting verbal comments, submitting written comments, or obtaining more information on the proposed rules may do so at these meetings. The Department will respond to all significant comments in the preamble accompanying the final rules.

9. Any other matters prescribed by statute that are applicable to the specific agency or to any specific rule or class of rules:
Not applicable.

10. Incorporation by reference and their location in the rules:
Not applicable.

11. The full text of the rules follows:

TITLE 18. ENVIRONMENTAL QUALITY

CHAPTER 13. DEPARTMENT OF ENVIRONMENTAL QUALITY SOLID WASTE MANAGEMENT

ARTICLE 15. THE LAND APPLICATION OF BIOSOLIDS

Section

ARTICLE 15. THE LAND APPLICATION OF BIOSOLIDS

R18-13-1501. Applicability

A. This Article shall apply to any person who prepares biosolids for land application, to transporters of biosolids that are to be land-applied, to the applicator of biosolids, and to the owner and leaseholder of land to which biosolids have been applied.

B. This Article shall not apply to the following:
1. Sludge determined to be hazardous in accordance with A.R.S. Title 49, Chapter 5, Article 2, and 40 CFR 261.
2. Sludge with a concentration of polychlorinated biphenyls (PCBs) equal to or greater than 50 milligrams per kilogram of total solids (dry-weight basis).
3. Grit (e.g., sand, gravel, cinders, or other materials with a high specific gravity) or screenings generated during preliminary treatment of domestic sewage by a treatment works.
4. Sludge generated during the treatment of either surface water or groundwater used for drinking water.

5. Sludge generated by an industrial facility during the treatment of industrial wastewater, or industrial wastewater combined with domestic sewage.
6. Commercial septage, industrial septage, or mixtures of domestic septage and commercial and/or industrial septage.
7. Special wastes, as defined and controlled under A.R.S. Title 49, Chapter 4, Article 9.
8. Biosolids stored at or exempted from a solid waste facility under A.R.S. Title 49, Chapter 4, Article 4, or any biosolids stored for the primary purpose of treatment.

C. Except as provided in R18-13-1507(A)(3) the land application of biosolids is exempt from the requirements of the aquifer protection program, as established by A.R.S. Title 49, Chapter 2, Article 3 and Department rules adopted thereunder.

R18-13-1502. Definitions

A. "Aerobic digestion" means the biochemical decomposition of organic matter in biosolids into carbon dioxide and water by microorganisms in the presence of air.
B. "Agricultural land" means land on which a food, feed, or fiber crop is grown.
C. "Agronomic rate" means the whole biosolids application rate (dry-weight basis) designed to meet both of the following conditions:
   1. Provide the amount of nitrogen needed by existing vegetation or a planned or actual crop, while
   2. Preventing nitrogen from passing below the root zone of the crop to the groundwater.
D. "Anaerobic digestion" means the biochemical decomposition of organic matter in biosolids into methane gas and carbon dioxide by microorganisms in the absence of air.
E. "Annual pollutant loading rate" means the maximum amount of a pollutant that can be applied to an acre/hectare of land during a 365-day period.
F. "Annual biosolids application rate" means the maximum amount of biosolids (dry-weight basis) that can be applied to an acre/hectare of land during a 365-day period.
G. "Applicator" means the person who arranges for and controls the site-specific land application of biosolids.
H. "Biosolids" means sewage sludge, including composted biosolids, which is placed on or applied to the land in order to use the beneficial properties of the material as a soil amendment, conditioner, or fertilizer.
I. "Bulk biosolids" means biosolids that are transported and land-applied in a manner other than in a bag or other similar container holding biosolids of 1.102 short tons/1 metric ton or less.
J. "Business day" means Monday through Friday, between the hours of 8 a.m. and 5 p.m., except for state and federal holidays.
K. "Coarse fragments" means rock particles in the gravel-size range or larger.
L. "Coarse and medium sands" means a soil mixture of which more than 50% of the sand fraction will retained on a No. 40 (0.425 mm) sieve.
M. "Coarse sandy loam" means a sandy loam soil with more than 50% of the sand-sized particles retained on a No. 10 (2.00 mm) sieve.
N. "Compost" or "composted biosolids" means a controlled, aerobic, or anaerobic, high temperature, accelerated, biological decomposition process which converts biosolids and other solid organic matter into a stable, humus-like mixture through the optimal growth and activity of naturally occurring, mixed populations of bacteria and fungi that are indigenous to the organic matter being composted.
O. "Cumulative pollutant loading rate" means the maximum amount of a pollutant that can ever be applied to a land-application site.
P. "CWA" means the Clean Water Act (formerly referred to as the federal Water Pollution Control Act), 33 U.S.C 1251 *et seq.*, as amended.
Q. "Department" means the Arizona Department of Environmental Quality.
R. "Domestic septage" means the liquid or solid material removed from a septic tank, cesspool, portable toilet, marine sanitation device, or similar system or device treating only domestic sewage. Domestic septage does not include commercial or industrial septage or restaurant grease-trap wastes.
S. "Domestic sewage" means waste or wastewater from humans or household operations that is discharged to publicly or privately owned treatment works. Domestic sewage also includes commercial and industrial wastewater which is discharged into a publicly owned or privately owned treatment works where the industrial or commercial wastewater combines with human excreta and other household wastewaters prior to treatment.
T. "Dry-weight basis" means the weight of biosolids calculated after the material has been dried at 105° Celsius until reaching a constant mass.
U. "Feed crops" means crops that are produced for ingestion by animals.
V. "Fiber crops" means crops grown for their physical characteristics. Fiber crops include, but are not limited to, flax and cotton and are not produced for ingestion by humans or animals.
W. "Fine sands" means soils with more than 50% of the particles passing through a No. 40 sieve.
X. "Food crops" means crops which are produced for ingestion by humans.
Y. "Gravel" means soil predominantly composed of particles of rock that will pass a 3-inch (75 mm) sieve and be retained on a No. 4 (4.75 mm) sieve.
Z. "Groundwater" means the water below the land's surface in the saturated zone which is sufficient to yield useable quantities of water to a well or spring.
AA. "Industrial wastewater" means wastewater that is generated in a commercial, industrial, or manufacturing process.
BB. "Land application," or "apply biosolids" or "biosolids applied to the land" means spreading biosolids on the surface of the land, injecting biosolids below the land's surface, or incorporating biosolids into the soil in order to condition the soil or fertilize crops.
CC. "Monthly average pollutant concentration" means the maximum allowable arithmetic mean concentration of a pollutant that is measured in biosolids during a calendar month.

DD. "Municipality" means a city, town, county, district, association, or other public body (including an intergovernmental agency of two or more of the foregoing entities created by or under state law). The definition includes special districts such as water districts, sewer districts, sanitary districts, utility districts, drainage districts, or similar entities that have as a principal responsibility the treatment, transport, use, or disposal of biosolids.

EE. "Other container" means either an open or closed receptacle, including, but not limited to, a bucket, bin, box, carton, trailer, pickup truck bed, or tanker vehicle with a load capacity of 1.102 short tons/one metric ton or less.

FF. "Pathogen" means a disease-causing organism.

GG. "Person" has the identical meaning as the definition set out in A.R.S. § 49-701(17) as well as an agent or employee thereof.

HH. "Person who prepares biosolids" means either the person who generates the biosolids during the treatment of domestic sewage in a treatment works or the person who derives a new product from the biosolids by combining it with another material, including blending several biosolids together.

II. "pH" means the logarithm of the reciprocal of the hydrogen ion concentration.

JJ. "Pollutant" means an organic substance, an inorganic substance, a combination of organic and inorganic substances, or a pathogenic organism that, after release into the environment and upon exposure, ingestion, inhalation, or assimilation into an organism, either directly from the environment or indirectly by ingestion through the food chain, could cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction), or physical deformities in either organisms or reproduced offspring.

KK. "Pollutant limit" means a numerical value that describes the mass or volume of a pollutant allowed per unit of biosolids; or the mass or volume of a pollutant that can be applied to an acre/hectare of land.

LL. "Privately Owned Treatment Works" means a device or system owned by a non-governmental entity and used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste which is generated off-site.

MM. "Public contact site" means land with a high potential for public exposure to the biosolids. Public contact sites include, but are not limited to, parks, sports fields, cemeteries, golf courses, and plant nurseries.

NN. "Publicly Owned Treatment Works" means a device or system owned by either a municipality or a state and used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste.

OO. "Reclamation" means drastically disturbed land which is restored or repaired using biosolids. This includes but is not limited to mining and construction sites.

PP. "Responsible official" means a principal corporate officer, general partner, proprietor, or, in the case of a municipality, a principal executive official, or by any duly authorized agent thereof.

QQ. "Sand" means soil that contains more than 85% grains in the size range that will pass a No. 4 (4.75 mm) sieve and be retained on a No. 200 (0.075 mm) sieve.

RR. "Sandy Loam" means a class of soil texture that contains a balanced mixture of silt and clay and is composed of between 50 and 85% sand-sized (>0.075 mm diameter) particles; and the clay content does not exceed 20%.

SS. "Sewage sludge" or "sludge" means solid, semi-solid, or liquid residue generated by publicly owned or privately owned treatment works during the treatment of domestic sewage. Sewage sludge includes domestic septage, scum removed in the course of treatment, and any material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge or grit and screenings generated during preliminary treatment of domestic sewage in a treatment works.

TT. "Specific oxygen uptake rate (SOUR)" means the mass of oxygen consumed per unit time per unit mass of total solids (dry-weight basis) in the biosolids.

UU. "Store or storage of biosolids" means the temporary holding or placement of biosolids on land prior to land application.

VV. "Ton" means a net weight of 2,000 pounds, also known as a short ton.

WW. "Total solids" means the biosolids residue that remains when the sewage sludge is dried at 105° Celsius.

XX. "Treatment of biosolids" means the preparation of biosolids for land application. This includes, but is not limited to, thickening, stabilization, and dewatering. Storage is not treatment of biosolids.

YY. "Treatment works" means a federally owned, publicly owned or privately owned device or system used to treat (including recycle and reclaim) either domestic sewage or a combination of domestic sewage and industrial waste.

ZZ. "Unstabilized solids" means the organic matter in biosolids that has not been treated or reduced through either an aerobic or anaerobic process.

AAA. "Vectors" means rodents, flies, mosquitos, or other organisms capable of transporting pathogens.

BBB. "Volatile solids" means the amount of the total solids lost when the biosolids are combusted at 550° Celsius in the presence of excess air.

CCC. "Watercourse" means the channel or normal high water bank of a waterway. The floodplain extending beyond the normal bank of the waterway is not considered to be part of the watercourse.

DDD. "Wetlands" means those areas that are inundated or saturated by surface water or groundwater at a frequency and duration to support a prevalence of vegetation typically adapted for life in saturated soil conditions.

R18-13-1503. General Requirements

A. A person shall not transport or apply biosolids to land in the state of Arizona, except as set forth in this Article.

B. When different from the applicator, the person who prepares biosolids for land application shall provide the applicator with all necessary information needed to comply with the requirements in this Article.

C. When different from the applicator, a person who prepares bulk biosolids shall not give the material to an

applicator that has not received written confirmation of the filing of a "Request for Registration" pursuant to R18-13-1504 from the Department.

D. The owner or leaseholder of land on which biosolids have been applied shall notify any subsequent owner or leaseholder of all previous land applications of biosolids and will disclose any of the site restrictions listed in R18-13-1508, which are still in effect at the time the property is transferred.

R18-13-1504. Applicator Registration

A. Any person intending to land-apply bulk biosolids in Arizona shall submit, on a form provided by the Department, a completed "Request for Registration". Applicators currently engaged in land application in Arizona must submit this request no later than 90 days after final publication of these rules.

B. No applicator shall engage in land application of biosolids beyond 120 days after publication of the final rule until and unless the applicator has obtained a written acknowledgement of the request for registration from the Department.

C. At a minimum the request for registration shall include the following information:
   1. The name, address, and telephone number of the applicator and any agents thereof.
   2. The name and telephone number of a primary contact person who has specific knowledge of the land-application activities of the applicator.
   3. Whether the applicator holds a National Pollutant Discharge Elimination System (NPDES) permit number or state equivalent and, if so, the permit number.
   4. The identify of the person or persons who will prepare the biosolids for land application, if different from the applicator.
   5. Unless the information is already on file at the Department as part of an approved land-application plan, for each site on which land application is anticipated to take place, the following information:
      a. The name, mailing address, and telephone number of the owner or leaseholder;
      b. The physical location of the site by legal description, including township, range, and section; county; and latitude and longitude at the center of the parcel;
      c. The number of acres/hectares at each site on which biosolids are planned to be land-applied;
      d. Except for sites described by R18-13-1505(D)(3), background concentrations of the pollutant parameters listed in Table 4 of R18-13-1505 from representative soil samples; and
      e. The location of any portion of the site having a slope greater than 6%.
      f. For sites on which biosolids have not been applied as of the date of the proposed rules, proof that public notice of the potential use of the site for land application of biosolids has been effected by the placement of a notice in the largest newspaper in general circulation in the area in which the site is located. In order to satisfy this requirement, said notice must appear at least once per week for no less than two consecutive weeks. In the event a site is not used for land application for a period of three consecutive years or more, the site must be renoticed prior to its use.

D. The request for registration shall be signed by a responsible official of the applicator.

E. The Department shall mail a written acknowledgement of requests for registration, including supplemental requests, within 15 business days of receipt of same.

F. Applicators wishing to use sites which are not identified in their original request for registration shall file a supplemental request with the Department prior to using the new site.

R18-13-1505. Pollutant Concentrations

A. Biosolids with pollutant concentrations which exceed any one or more of the instantaneous pollutant concentrations set forth in Table 1 of this Section shall not be land-applied. Biosolids placed on public contact sites with a low potential for child occupancy are exempt from the selenium limit in Table 1.

B. Composted biosolids shall not exceed any one or more of the monthly average pollutant concentrations set out in Table 2 of this Section.

C. No person shall land-apply non-composted bulk biosolids to a site on which the annual pollutant loading rates in Table 3 of this Section will be exceeded. Annual application rates shall be determined using the methodology set out in Appendix A.

D. No person shall land-apply non-composted bulk biosolids to a site where any one or more of the cumulative pollutant loading rates in Table 4 of this Section will be exceeded. In addition, compliance with these cumulative pollutant rates will be determined using the following considerations:
   1. Cumulative pollutant rates shall be calculated using all known biosolids applications to a site since September 13, 1979.
   2. Where a site is known to have received biosolids applications prior to the effective date of this rule, applicators must calculate the existing cumulative level of the pollutants set out in Table 4 using either actual analytical data from the application events or by taking representative soil samples of the site.
   3. For those sites which have not received biosolids prior to the effective date of this rule, background soil tests need not be conducted.
   4. Biosolids placed on public contact sites with a low potential for child occupancy are exempt from the selenium limit in Table 4.

Table 1. Instantaneous Pollutant Concentrations Applicable to All Land-applied Biosolids

Pollutant	Concentrations (milligrams per kilogram) {1}
Arsenic	75.0
Cadmium	85.0
Chromium	3000.0
Copper	4300.0
Lead	840.0
Mercury	57.0
Molybdenum	75.0
Nickel	420.0
Selenium	100.0
Zinc	7500.0

{1} Dry-weight basis.

Table 2. Monthly Average Pollutant Concentrations for Composted Biosolids Only

Pollutant	Concentrations (milligrams per kilogram) {1}
Arsenic	41.0
Cadmium	39.0
Copper	1500.0
Lead	300.0
Mercury	17.0
Nickel	420.0
Selenium	100.0
Zinc	2800.0

{1} Dry-weight basis.

Table 3. Annual Pollutant Loading Rates for Non-composted Biosolids

Pollutant	Loading rate (in kilograms per hectare) {1}
Arsenic	2.0
Cadmium	1.9
Chromium	150.0
Copper	75.0
Lead	15.0
Mercury	0.85
Nickel	21.0
Selenium	5.0
Zinc	140.0

{1} Dry-weight basis.

Table 4. Cumulative Pollutant Loading Rates for Non-composted Biosolids

Pollutant	Loading rates (in kilograms per hectare) {1}
Arsenic	41.0
Cadmium	39.0
Copper	1500.0
Lead	300.0
Mercury	17.0
Nickel	420.0
Selenium	100.0
Zinc	2800.0

{1} Dry-weight basis.

R18-13-1506. Pathogen Controls

A. All biosolids applied to land must meet either Class A or Class B pathogen requirements as described in this Section.

B. Biosolids which are sold or given away in a bag or similar container, or which are to be applied on a lawn or home garden, must meet the Class A requirements set out in subsection (D) below.

C. Land on which Class B biosolids have been applied is subject to the use restrictions set out in Section R18-13-1508.

D. A biosolid satisfies the Class A pathogen requirements when the density of either fecal coliform is less than 1000 Most Probable Number per gram of total solids (dry-weight basis), or the density of Salmonella sp. bacteria is less than three Most Probable Number per four grams of total solids (dry-weight basis); and one of the following ten alternative pathogen treatment options, set forth below:

1. Alternative 1 -- The pathogen treatment process meets one of the following time and temperature requirements:
   a. When the percent solids are 7% or greater, the temperature of the biosolids shall be held at 50° Celsius for at least 20 minutes; except when the biosolids are heat-treated by either warmed gases or an immiscible liquid, in which case the requirements of subsection (D)(1)(b) must be met.
   b. When the biosolids are heat-treated by either warmed gases or an immiscible liquid, a temperature of 50° Celsius shall be held for at least 15 seconds; in the event a higher temperature is held, the exact time period may be calculated using the following equation:

$$D = \frac{131{,}700{,}000}{10^{[0.1400t]}}$$

Where: D = time in days, and
t = temperature in degrees Celsius.

c. When the percent solids are less than 7%, the temperature of the biosolids shall be held at 50° Celsius for at least 30 minutes. In the event a higher temperature is held, the exact time period may be calculated using higher the following equation:

$$D = \frac{50{,}070{,}000}{10^{[0.1400t]}}$$

Where: D = time in days, and
t = temperature in degrees Celsius.

d. When the percent solids are less than 7%, and the time of heating is at least 15 seconds, but less than 30 minutes, the exact time and temperature to be maintained is calculated using higher the following equation:

$$D = \frac{131{,}700{,}000}{10^{[0.1400t]}}$$

Where: D = time in days, and
t = temperature in degrees Celsius.

2. Alternative 2 - The pathogen treatment process meets the following parameters:
   a. The pH of the biosolids is raised to 12 or higher and held above 12 for at least 72 hours;
   b. During the period that the pH is above 12, the temperature of the biosolids is held above 52° Celsius for at least 12 hours; and
   c. At the end of the 72-hour period, the biosolids are air-dried to achieve a percent solids of more than 50%.
3. Alternative 3 - The results of the pathogen treatment are as follows:
   a. The biosolids have a enteric virus density of less than one plaque-forming unit per four grams of total solids (dry-weight basis); and
   b. The biosolids have a viable helminth ova density of less than one per four grams of total solids (dry-weight basis).
   c. Once the density requirements in subsections (a) and (b) are consistently met and the values and ranges of the pathogen treatment process used are documented, future compliance may be shown by reporting those values and ranges rather than by measuring virus and helminth ova densities.
4. Alternative 4 - Composting
   a. Using either the within-vessel or the static-aerated-pile composting methods, the temperature of the biosolids is maintained at 55° Celsius or higher for three days.
   b. Using the windrow-composting method, the temperature of the biosolids is maintained at 55° or higher for 15 days or longer. During the period when the compost is maintained at 55° or higher, there shall be a minimum of five turnings of the windrow.
5. Alternative 5 - Heat drying. The biosolids are dried by contact with hot gases to reduce the moisture content to 10% or lower. During the process, either:
   a. The temperature of the sewage sludge particles exceeds 80° Celsius, or
   b. The wet-bulb temperature of the gas as the biosolids leave the dryer exceeds 80° Celsius.
6. Alternative 6 - Heat treatment. Liquid biosolids are heated to a temperature of 180° Celsius or higher for at least 30 minutes.
7. Alternative 7 - Thermophilic aerobic digestion. Liquid biosolids are agitated with air or oxygen to maintain aerobic conditions, and the mean cell residence time of the biosolids is 10 days at 55° to 60° Celsius.
8. Alternative 8 - Beta ray irradiation. Biosolids are irradiated with beta rays from an accelerator at dosages of at least 1.0 mega rad at room temperature (ca. 20° Celsius).
9. Alternative 9 - Gamma ray irradiation. Biosolids are irradiated with gamma rays from certain isotopes, such as Cobalt 60 and Cesium 137, at room temperature (ca. 20° Celsius).
10. Alternative 10 - Pasteurization. The temperature of the biosolids is maintained at 70° Celsius or higher for at least 30 minutes.

E. A biosolid satisfies the Class B pathogen requirements when it meets one of the six options set out below:
1. Alternative 1 - The geometric mean of the density of fecal coliform in seven samples shall be less than either 2,000,000 most probable number per gram of total solids (dry-weight basis), or 2,000,000 colony-forming units per gram of total solids (dry-weight basis).
2. Alternative 2 - Air drying. The biosolids are dried on sand beds or basins for a minimum of three months. During at least two of the three months, the average daily ambient temperature shall be above 0° Celsius;
3. Alternative 3 - Lime stabilization. Sufficient lime is added to raise the pH of the biosolids to 12 for at least two hours;
4. Alternative 4 - Aerobic digestion. The biosolids are agitated with air or oxygen to maintain aerobic conditions for a specific mean cell residence time at a specific temperature. Values for the mean cell residence time and temperature shall be between 40 days at 20° Celsius and 60 days at 15° Celsius;
5. Alternative 5 - Anaerobic digestion. The biosolids are treated in the absence of air for a specific mean cell residence time at a specific temperature. Values for the mean cell residence time and temperature shall be between 15 days at 35° to 55° Celsius and 60 days at 20° Celsius; or
6. Alternative 6 - Composting. Using either the within-vessel, static-aerated-pile, or windrow-composting methods, the temperature of the biosolids is raised to 40° Celsius or higher for five consecutive days. For at least four hours during the five days, the temperature in the compost pile shall exceed 55° Celsius.

R18-13-1507. Management Practices

A. Applicators of non-composted bulk biosolids shall comply with the following management practices at each land application site:

1. Biosolids shall not be applied to soil with pH of less than 6.5 at the time of the sludge application unless otherwise authorized by the Department.
2. Biosolids shall not be applied to land with slopes greater than 6% unless otherwise authorized by the Department.
3. Except in compliance with a permit issued under the Aquifer Protection Program (see A.R.S. § 49-241 and A.A.C. R18-9-101) biosolids shall not be applied to land under the following conditions:
   a. Class A Biosolids shall not be applied to land where the depth to groundwater is 5 feet (1.52 meters) or less.
   b. Class B Biosolids shall not be applied to land where the depth to groundwater is 10 feet (3.04 meters) or less.
   c. Class B Biosolids applied to gravel, coarse or medium sands, and sands with >15% course fragments shall not be applied where the depth to groundwater is 40 feet (12.2 meters) or less.
4. Biosolids shall not be applied to land that is 32.8 feet (10 meters) or less from watercourses unless otherwise authorized by the Department.
5. Biosolids shall not be stored or applied closer than 1000 feet (305 meters) from a public or semi-public drinking water supply well, and no closer than 250 feet (76.2 meters) from any other water well, unless otherwise authorized by the Department.
6. Biosolids shall not be stored or applied within 25 feet (7.62 meters) of a public right-of-way or private property line unless the applicator receives permission to apply biosolids from the owner or leaseholder of the adjoining property.
7. Except in the case of reclamation, biosolids shall not be applied at an application rate that is equal to or greater than the agronomic rate of the vegetation present or crop grown on the site [see Appendix B].
8. Biosolids shall not be applied in a manner which could adversely affect a threatened or endangered species or critical habitat as defined under the Endangered Species Act, 16 U.S.C. 1531 *et seq.*, 1973, as amended; nor shall biosolids be applied in a manner contrary to A.R.S. Title 3, Chapter 7, or A.R.S. Title 17, Chapter 1, Article 6, and regulations thereunder.
9. Biosolids, including domestic septage, shall not be applied at a hydraulic-loading rate which exceeds the rate calculated using the following equation:

$$\text{The RATE (in gallons per acre per year)} = \frac{\text{Crop or vegetation nitrogen needs}}{0.0026}$$

10. Biosolids shall not be applied to land that is flooded, frozen, or snow-covered, except as authorized by a permit issued pursuant to Section 1342 or 1344 of the CWA or an equivalent state permit.
11. Once a site has received biosolids containing nitrogen at the equivalent of the agronomic rate appropriate for that site, a crop must be grown prior to any additional biosolids application.
12. Irrigation of an application site shall not exceed the consumptive use and evapotranspiration needs of the crop.
13. To minimize odors, biosolids applied within 1,000 feet (305 meters) of a dwelling shall be injected or incorporated into the soil within six hours of being applied.
14. Applicators shall provide the owner or leaseholder of the land on which bulk biosolids are applied with a written copy of any restrictions placed on the use of the land as a result of the application.

B. When composted or non-composted biosolids are to be bagged or placed in a similar container, the preparer shall distribute the a label or information sheet to persons receiving the material. This label or information sheet shall contain at least the following information:

1. The identity of the person who prepared the biosolids;
2. Instructions on the proper use of the material, including agronomic rates, and an annual application rate which ensures that the annual pollutant rates set out in R18-13-1505 will not be exceeded; and
3. A statement that violation of these instructions constitutes a violation of this Article.

R18-13-1508. Site Restrictions

A. The following site restrictions shall apply to land where biosolids, which do not meet the Class A pathogen control requirements set out in R18-13-1506, have been land-applied:

1. Food crops with harvested parts that touch the biosolids/soil mixture but otherwise grow above the land's surface shall not be harvested for 14 months following application;
2. When the biosolids remain on the land's surface for four months or more, food crops with harvested parts growing in or below the land's surface shall not be harvested for 20 months following application;
3. When the biosolids remain on the land's surface for less than four months prior to incorporation, food crops with harvested parts growing in or below the land's surface shall not be harvested for 38 months following application;
4. Feed and fiber crops shall not be harvested for 30 days after application.
5. Animals shall not be allowed to graze on the land for 30 days after application.
6. Public access to public contact sites shall be restricted for one year after application.
7. Public access to land with a low potential for human contact shall be restricted for 30 days after application.
8. Turf to be used at a public contact site or private residence shall not be harvested for one year from application.

B. Once application is completed at a site, applicators shall, in writing, inform land owners and leaseholders of the following information:

1. Whether the cumulative pollutant loading at the site is at or greater than 90% of the site's available capacity according to Table 4 of R18-13-1505;
2. Whether, due to the application of biosolids, any of the restrictions set forth in R18-13-1507 apply to the property and, if so, the applicator shall state the nature of such restrictions; and
3. This document shall be signed by a responsible official of the applicator and include the following statement:

   "I certify, under penalty of law, that the information contained herein is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are substantial penalties for false representations, including fines and imprisonment."

C. Land owners and leaseholders shall provide applicators with a signature indicating receipt of the site restriction statement.

R18-13-1509. Vector Attraction Reduction

One of the following vector attraction reduction procedures shall be met when biosolids are land-applied. Biosolids that are sold or given away in a bag or similar container, or are applied to a lawn or home garden, shall meet one of the vector attraction reduction alternatives set out in subsection (1).

1. Pre-land Application Alternatives
   a. Reducing the mass of volatile solids by a minimum of 38% using the methodology set out in "Environmental Regulations and Technology - Control of Pathogens and Vector Attraction in Sewage Sludge", EPA-625/R-92/013, 1992, U.S. Environmental Protection Agency, Cincinnati, Ohio 45268) incorporated herein by reference, and no future editions, and on file with the Department and the Secretary of State;
   b. For an anaerobically digested biosolid, by anaerobically re-digesting a portion of the previously digested material in a laboratory bench-scale unit for 40 additional days at a temperature between 30° and 37° Celsius. Vector attraction reduction is achieved where the volatile solids in the material at the beginning of the period are further reduced by less than 17%;
   c. For aerobically digested biosolids, by aerobically re-digesting a portion of the previously digested material (which has a percent solids of 2% or less), in a laboratory bench-scale unit for an additional 30 days at 20° Celsius. Vector attraction reduction is achieved where the volatile solids in the material at the beginning of the period are further reduced by less than 15%;
   d. Subjecting the biosolids to an aerobic process during which the specific oxygen uptake rate (SOUR) is equal to or less than 1.5 milligrams of oxygen per hour per gram of total solids (dry- weight basis) at a temperature of 20° Celsius;
   e. Subjecting the biosolids to an aerobic process for 14 days or longer, during which the low temperature shall be higher than 40° Celsius and the average temperature shall be higher than 45° Celsius;
   f. Raising the pH of the biosolids to 12 or higher by alkali addition and, without the addition of more alkali, shall remain at 12 or higher for two hours and then at 11.5 or higher for an additional 22 hours;
   g. The percent solids containing unstabilized solids generated in a primary wastewater treatment process shall be equal to or greater than 75% based on the moisture content and total solids prior to mixing with other materials; or
   h. The percent solids containing unstabilized solids shall be equal to or greater than 90% based on the moisture content and total solids prior to mixing with other materials.
2. Post Land Application Alternatives
   a.
      i. Injecting the biosolids below the surface of the land such that no significant amount of biosolids is present on the land surface one hour after injection.
      ii. For purposes of meeting the Class A pathogen requirements, injection shall occur within eight hours after being discharged from a Class A pathogen treatment process.
   b.
      i. Incorporating the biosolids into the soil within six hours after application.
      ii. For purposes of meeting the Class A pathogen requirements, incorporation shall occur within eight hours after being discharged from a Class A pathogen treatment process.
3. For domestic septage vector attraction shall be met by one of the following three methods:
   a. By injecting in accordance with subsection (2)(a) above;
   b. By incorporating in accordance with subsection (2)(b) above; or
   c. By raising the pH to 12 or higher through the addition of alkali and, without the addition of more alkali, holding the pH at 12 or higher for at least 30 minutes.

R18-13-1510. Transportation

A. Vehicles used to transport bulk biosolids into and within Arizona shall satisfy A.A.C. R18-8-612 by having a trailer or tank which is covered to prevent blowing of materials and be leakproof and fly-tight.

B. Vehicle trailers and tanks used to transport biosolids shall be periodically cleaned to prevent odors or insect breeding. Tank vehicles used to transport commercial or industrial septage, or restaurant grease-trap wastes, which are also to be used to haul domestic septage, shall be cleaned before loading the domestic septage to ensure the mixing of wastes does not occur.

C. In the event biosolids are spilled while being transported, the transporter shall undertake the following activities:
   1. Spillage, including any visibly discolored soil, shall be picked up immediately by the transporter.

2. Within 24 hours of the spill, the transporter shall notify the Department of the spill and shall submit written notification within seven days. This written notification shall include the location of the spill, the reason it occurred, the amount of biosolids spilled, and the steps taken to clean up the spill.

R18-13-1511. Self-monitoring

A. Except as provided in subsection (B), the frequency of self-monitoring for the pollutants listed in R18-13-1505, the pathogen requirements in R18-13-1506, and the vector attraction reduction requirements in R18-13-1509 shall be as indicated in Table 5 below.

Table 5. -- Frequency of Self-monitoring

Amount of biosolids applied (tons/metric tons per 365-day period) {1}	Frequency
Greater than zero but less than 319.6/290	Once per year
Equal to or greater than 319.6/290 but less than 1,653/1,500	Once per quarter (four times per year)
Equal to or greater than 1,653/1,500 but less than 16,530/15,000	Once per 60 days (six times per year)
Equal to or greater than 1,653/15,000	Once per month (12 times per year)

{1} The amount of biosolids land-applied in a calendar year (dry-weight basis).

B. In the case of biosolids that have been stockpiled or lagooned, the pathogen and vector attraction sampling need only be performed once prior to land application and sampling shall be conducted in a manner which is representative of the entire stockpile or lagoon.

C. All additional, more frequent biosolids samples collected and analyzed during the reporting period shall be submitted to the Department along with the regularly scheduled data required by subsection (A) above.

D. As needed the Department may order the preparer or applicator to collect and analyze additional samples to measure pollutants of potential concern other than those set out in Table 1 of R18-13-1505.

E. Samples collected for analysis shall be obtained in a manner which does not compromise the integrity of the sample quality and shall be representative of the quality of the biosolids being land-applied during the reporting period.

F. Biosolids samples shall be tracked using chain-of-custody procedures that document the persons in control of the sample from the time it was collected through analysis.

G. Biosolids samples shall be analyzed in accordance with the analytical methods set out in 40 CFR 503.8 or A.A.C. R9-14-609 or R9-14-610.

H. Monitoring for pathogen and vector attraction reduction treatment operating parameters, such as time and temperature, shall be monitored on a continuous basis during treatment.

I. Monitoring for the management practices set out in R18-13-1507 shall be conducted and recorded for each site.

J. Records of all compliance measurements, including the analysis of pollutant concentrations, shall be kept in accordance with R18-13-1512 and shall be reported to the Department in accordance with R18-13-1513.

R18-13-1512. Recordkeeping

A. Persons who prepare biosolids shall develop the following information and shall retain this information for at least five years:

1. The date, time, and method used for each sampling activity and the identity of the person or persons collecting the sample;
2. The date, time, and method used for each sample analysis and the identity of the person or persons conducting the analysis;
3. The results of all analyses of pollutants regulated under R18-13-1505;
4. The results of all pathogen density analyses and applicable descriptions of the methods used for pathogen treatment pursuant to R18-13-1506;
5. Descriptions of the methods used, if any, and the operating values and ranges observed in any pre-land application, vector reduction activities required by R18-13-1509(1); and
6. The records described in subsections (A)(1)-(5) above shall be accompanied by the following certification statement signed by a responsible official of the person who prepares the biosolids:

"I certify, under penalty of law, that the pollutant analyses, and the description of pathogen treatment and vector reduction activities, have been made under my direction and supervision, and in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information used to determine whether the applicable biosolids requirements have been met. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

B. Applicators of bulk biosolids, except composted biosolids, shall develop the following information for each land-application site and, except as indicated in subsection (B)(6), shall retain this information for at least five years:

1. The location, by either street address or latitude and longitude, of each site;
2. The number of acres/hectares in each site;
3. The date and time the biosolids were applied to each site;
4. The amount of biosolids (in dry metric tons) applied to each site;
5. The biosolids loading rates (in tons or kilograms of biosolids per acre/hectare);
6. The cumulative pollutant levels of each regulated pollutant (in tons/kilograms per acre/hectare). These records shall be retained indefinitely;

7. Unless conducted by the Preparer, the results of all pathogen density analyses and applicable descriptions of the methods used for pathogen treatment pursuant to R18-13-1506;
8. A description of the activities and measures used to ensure compliance with the management practices required by R18-13-1507;
9. If vector attraction reduction was not met by the person who prepares the biosolids, a description of the vector attraction reduction activities used by the applicator to ensure compliance with the requirements of R18-13-1509;
10. A description of any applicable site restrictions imposed by R18-13-1508 where Class B biosolids have been applied and documentation that the applicator has notified the land owner or leaseholder of these restrictions;
11. The records described in subsections (B)(1)-(8) shall be accompanied by the following certification statement signed by a responsible official of the applicator of the biosolids:

"I certify, under penalty of law, that the information and descriptions herein have been made under my direction and supervision and in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information used to determine whether the applicable biosolids requirements have been met. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

C.

1. All records required to be retained pursuant to this Section shall be subject to periodic inspection and copying by the Department.
2. In the event of unresolved litigation, including enforcement, concerning the activities documented by the records required by this Section, the period of record retention shall be extended pending final resolution of the litigation.

R18-13-1513. Reporting

A. Persons who prepare biosolids for application shall provide the applicator written notification of the pollutant concentrations, including total nitrogen (as N on a dry-weight basis) in accordance with R18-13-1503(B).
B. Transporters shall immediately report spills to the Department in accordance with R18-13-1510(C).
C. Bulk applicators of biosolids other than composts shall provide owners and leaseholders of land-application sites with information on the pollutant concentrations and loading rates of biosolids applied to that site, as well as any applicable site restrictions under R18-13-1508.
D. Bulk applicators of biosolids other than composts must report to the Department when 90% or more of any cumulative pollutant loading rate has been used at a site.
E. On February 19 of each year, persons land-applying non-composted bulk biosolids shall, by letter or form provided by the Department, report the following information on their activities during the previous calendar year to the Department:
   1. Actual sites used; and
   2. For each site used the following information:
      a. Amount of biosolids applied (in tons/kilograms per acre/hectare);
      b. Application loading rates (in a ton/kilograms per acre/hectare);
      c. Pollutant concentrations (in milligrams per kilogram of biosolids);
      d. Pathogen treatment methodologies used during year; and
      e. Vector attraction reduction methodologies used during year.
F. On February 19 of each year, persons preparing composted biosolids shall, by letter or form provided by the Department, report to the Department the following information regarding their activities during the previous calendar year:
   1. Amount of composted biosolids produced (tons/kilograms);
   2. Pollutant concentrations (in milligrams per kilogram of biosolids);
   3. Pathogen treatment methodologies used during year; and
   4. Vector attraction reduction methodologies used during year.
G. All annual self-monitoring reports shall contain the following certification statement signed by a responsible official:

"I certify, under penalty of law, that the information and descriptions herein have been made under my direction and supervision and in accordance with a system designed to ensure that qualified personnel properly gather and evaluate the information used to determine whether the applicable biosolids requirements have been met. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment."

R18-13-1514. Enforcement

A. Persons subject to this Article shall allow, during reasonable times, representatives of the Department to enter property subject to this Article to:
   1. Inspect all biosolids pathogen and vector treatment facilities, transportation vehicles, and land-application sites to determine compliance with this Article;
   2. Inspect and copy records prepared in accordance with this Article;
   3. Sample biosolids quality.
B. Any person violating this Article shall take all reasonable steps to minimize any adverse consequences to human health or the environment without the Department ordering such activities.
C. Persons who violate the requirements of this Article are subject to compliance and abatement orders issued by the Department and injunctive and other appropriate relief sought by the Attorney General.
D. Any person who violates any requirement of this Article is subject to a civil penalty of not more than $1,000 per day for each separate violation.
E. In the event of one or more ongoing or continuing violations, the maximum civil penalty for any one ongoing violation shall be capped at $15,000 per proceeding.

F. Persons who knowingly or negligently violate any requirement of this Article are guilty of a Class 2 misdemeanor and may, if convicted, be imprisoned for up to four months per violation.

G. A person's failure to use due care, observe proper operational practices, or perform routine maintenance shall not be a defense to an enforcement action under this Article.

Appendix A. Procedures to Determine Annual Biosolids Application Rates

This appendix contains the procedure used to determine the annual biosolids application rate (ABA) which ensures that the annual pollutant loading rates in Table 3 of R18-13-1505 shall not be exceeded.

A. The relationship between the annual pollutant loading rate (APLR) for a pollutant and the annual biosolids application rate (ABAR) is shown in Equation (1) below.

$$APLR = C \times ABAR \times 0.001 \qquad \text{Eq. (1)}$$

Where:

APLR = Annual pollutant loading rate in kilograms of biosolids, per hectare, per 365-day period;

C = Pollutant concentration in milligrams, per kilogram of total solids (dry-weight basis);

ABAR = Annual biosolids application rate in metric tons per hectare per 365-day period (dry-weight basis); and

0.001 = A conversion factor.

B. Therefore, once Equation 1 is rearranged, an ABAR can be calculated using the following procedure:

1. Analyze a biosolids sample to determine a concentration for each of the pollutants listed in Table 3 of R18-13-1505.
2. Using each of the pollutant concentrations from Step 1 and the APLRs from Table 3 of R18-13-1505, calculate a separate ABA for each pollutant using Equation (2) below.

$$ABAR = \frac{APLR}{C \times 0.001} \qquad \text{Eq. (2)}$$

3. The ABAR for the biosolid is the lowest value calculated in Step 2 for any pollutant.

Appendix B. An Example Calculation to Determine the Available Nitrogen in Biosolids

Use the following seven steps to determine the plant-available nitrogen which, when compared with the nitrogen needs of a specific crop or vegetation grown on the application site, identifies the "agronomic rate" to be observed by applicators:

1. Sample the biosolids to obtain the following nitrogen percent and concentration information (The numbers provided are examples):

Total kjeldahl nitrogen = 2.58% (25,800 mg/kg)

Ammonia nitrogen = 0.51% (5,100 mg/kg)

Nitrate nitrogen = 0.0266% (266 mg/kg)

2. Determine the percent of organic nitrogen by adding the ammonia and nitrate nitrogen together and subtracting the sum from the total kjeldahl nitrogen

Organic N = Total K. N. - (Ammonia N + Nitrate N)

O.N. = 2.58% - (0.51% + 0,0266%)

O.N. = 2.0434%

3. Convert the percentage obtained in step two to an actual percent of organic nitrogen by multiplying by 10:

2.0434% x 10 = 20.434 or approximately 20%

4. Convert the original percentages whole numbers and then convert the nitrogen per dry ton of biosolids by multiplying by 2000 lbs./dry ton:

Total K. Nitrogen	=	2.58% = 0.0258 x 2000 lb/dry tons
	=	51.6 lbs/dry ton
Ammonia Nitrogen	=	0.51% = 0.0051 x 2000 = 10.2 lb/dry ton
Nitrate Nitrogen	=	0.0266% = 0.000266 x 2000
	=	0.5 lbs/dry tons

5. Determine the amount of organic nitrogen available by summing the amounts of Ammonia N and Nitrate N and subtracting from Total K. N.:
Organic Nitrogen = 51.6 - (10.2 + 0.5) = 40.9 lbs/dry ton

6. Determine the plant available nitrogen by multiplying the percentage of organic nitrogen to the amount of organic nitrogen and adding the ammonia nitrogen and the nitrate nitrogen to the product.
   a) 20% of 40.9 = 8.18
   b) 10.2 + 0.5 + 8.18 = 18.88

Therefore, there are approximately 18.9 pounds of plant-available nitrogen per dry ton of the sampled biosolids.

7. Finally, establish the crop to be grown, its nitrogen need, and how many tons of biosolids can be applied to provide this need. For example, turf typically uses up to 225 pounds of nitrogen per acre. Since our biosolids contains 18.9 lbs per ton, and the crop can use up to 225 lbs., an allowable rate of up to 11.9 tons per acre could safely be applied.